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LRTS 1990 Referees

The process by which articles are selected for publication in *LRTS* involves the use of expert peer reviewers, or referees, who contribute considerable time and energy to ensure the accuracy, relevance, and importance of the research reported. All of us—readers, authors, the editorial board, and especially the editor—are indebted to our volunteer referees. The following is a list of those who reviewed material for *LRTS* in 1990 and to whom we hereby offer our thanks.—*Ed.*

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AACR2 Rules Used in Assigning Access Points for Books in Two Subjects: Implications for Automatic Cataloging Expert Systems

Roy Meador III and Glenn R. Wittig

The cataloging rules used to establish access points for two groups of books were explored. Samples of cataloging records for books in chemistry and economics were examined to identify the clusters of rules that had been employed and that might be used in expert systems. The results were compared, and implications were drawn for automatic cataloging via knowledge-based systems.

Expert systems are sophisticated computer programs, which provide solutions to complex problems that would normally require a high degree of human expertise to solve. These systems—containing data, knowledge, and control levels—model the thought processes of experts and have been successfully applied in a variety of domain-specific areas in research, business and medicine. Thus far, there have been relatively few applications in librarianship.

Work on developing expert systems for cataloging materials automatically was initiated in the early 1980s. This early work focused on the descriptive cataloging prescribed in the *Anglo-American Cataloguing Rules*, 2d ed. (*AACR2*). Roy Davies (Exeter, England) and Roland Hjerppe (Linkoping, Sweden) independently began projects that concentrated on *AACR2*, especially on chapter 21 "Choice of Access Points." Other researchers have also begun projects involving automatic cataloging and expert systems.

Presently, expert systems for microcomputers cannot accommodate large sets of rules without the use of costly development tools. *AACR2*, containing hundreds of rules, is much too large and complex to be accommodated by a microcomputer-based expert system. Projects that attempted to embrace the entire set of rules encountered a variety of difficulties. The HEADS project, begun at Teeside Polytechnic, had to be reimplemented "as a series of smaller

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knowledge bases . . . in order to alleviate" both "memory limitations and an unacceptably slow start-up response time."[1] The Exeter Project was never completed because a garbage collector (a subroutine that reallocates space) was not implemented in the program; thus the system quickly ran out of available memory and could not be run.[2] Researchers, learning from such failures, have tried to limit the number of rules in the knowledge base portion of the system (i.e., the portion that contains rules often in the form of if/then statements). Stuart Weibel at OCLC, having limited his system to *AACR2* level 1 cataloging, drastically reduced both the size and complexity of the rule base.[3] Others have also followed suit because of the unwieldy set of rules with which they must contend.[4]

PURPOSE OF THE STUDY

The purpose of this research was to determine, and then to compare, the cores of *AACR2* rules used in assigning access points for random samples of monographs in chemistry and a subset of economics. Just how *AACR2* rule usage compared when catalogers assigned access points for works in these two disciplines was the major question being explored.

This study was initially designed to create subsets of rules that might be used in expert systems for automatic cataloging. A small percentage of the rules enumerated in *AACR2* are used in cataloging a single item. Choosing an applicable rule will often logically exclude the consideration of many other rules. This concept can be clearly seen in the algorithms that are based on selected chapters of *AACR2*.[5] Once a particular direction in an algorithm's tree-like structure is chosen, many options are consequently eliminated. If this held true for books within a discipline—i.e., if only a small percentage of the rules were to be applicable for a particular discipline while a large portion of the code were effectively eliminated—the consequence of such findings would be useful in at least two significant ways.

First, the rule base for an expert system would be easy to construct and control if fewer rules were used in the knowledge base. A system that contained only a subset of applicable cataloging rules (ones that are typically used in cataloging materials in a specific discipline) would reduce the number of rules in the knowledge base and would simplify the logical relationships that would have to be built into the system.

Second, if a core of rules for a particular discipline were significantly different from the cores of other disciplines, a scale of probabilities (based on the percentage of rule use) could be generated. Probabilities are frequently built into the rule base of an expert system to enhance its "decision making" capabilities.

This study was also designed to create a preliminary methodology for comparing rule sets or cores of rules. As mentioned earlier, significant differences between sets of rules provide some indication that building separate systems (or modules in a large system) is feasible. One of the most difficult tasks in building expert systems is the definition of the system's domain. Therefore, if a methodology can be developed to reveal more concretely how rules and rule sets converge and diverge, construction of expert systems could be enhanced.

The present study is no more than an initial investigation, a means of identifying cores of rules and of determining whether or not the differences between these cores can be regarded as significant. The results could help to determine whether future studies should be pursued. In other words, the study might be indicative of the feasibility of designing an expert system for automatically cataloging books of a single discipline.

Recently, Roy Davies suggested that a new paradigm for a cataloging code should be developed. According to Davies, one of the practical first steps for such a paradigm is a "Bradford-Zipf analysis of frequency of use of different rules."[6] In a footnote, he further expanded this idea: "I do not know if the frequency of use of different rules agrees with the rank size law but an analysis of

AACR2 along these lines might possibly be helpful in determining an optimum size for a new code or a knowledge base derived from it."[7] It was this idea that initiated the present study.

Ann Fox, ten years earlier, compared the 1949 ALA rules and the 1967 *Anglo-American Cataloguing Rules* for their amenability to computer simulation.[8] Limiting her study to rules for assigning main entry, Fox established a distribution of rule usage prior to developing simulation models. More recently, Svenonius, Baughman, and Molto studied the distribution of access points when they applied an "every-name-an-access point" rule as an alternative to *AACR2*'s rules for choice of access points.[9] These studies are similar to the present one in that they employ distributions of rules to gain insight about the cataloging process of assigning entries. The present preliminary study attempts to explore: (1) how rule usage varies in one code when books from two disciplines are cataloged; (2) how well the distribution methodology reveals what is really at work; and, (3) what the implications are for the development of expert systems for the cataloging process.

Peripherally, the writings of Roland Hjerppe (regarding the difficulty in using *AACR2* as a knowledge base for expert systems) have helped establish the need for this study. Hjerppe developed two expert systems, ESSCAPE/EMYCIN and ESSCAPE/Expert-Ease, to evaluate *AACR2*. His conclusions were both critical and substantial. He suggested abandoning the code for one that would be more efficient—a code that contained fewer rules and maintained greater consistency.

The present study sought an alternative approach that would not have major repercussions within the profession. If a distinct subset of rules can be identified for disciplines such as chemistry or economics, smaller systems might eventually be developed and many of the problems that Hjerppe and others have exposed could be alleviated.

In designing the investigation three hypotheses were established:

1. The core of rules used in assigning access points for the chemistry sample will contain three clusters of rules because author, corporate author, and title main entries will be fairly evenly distributed.
2. The core of rules used in assigning access points for the economics sample will contain one cluster of rules because most books will be assigned an author main entry.
3. Although there will be some overlap of rule usage, there will be a difference in the cores of rules used in assigning access points for the literature of each discipline.

METHODOLOGY

The 1984 volume of *American Book Publishing Record* was used as the source of titles for this investigation. *ABPR* is a comprehensive listing of books published in the United States each year. Its arrangement by *Dewey Decimal Classification* facilitated the focus on books representative of various disciplines. Chemistry and economics were chosen because their literatures were well-defined in the classification scheme and because they embraced fewer titles than many of the other disciplines under consideration in the preliminary stages of this research.

Samples of 30 titles from the two disciplines were randomly selected. Items within the sampling frame (Economics [DDC: 330-332]: N = 646; Chemistry [DDC: 540-549]: N = 238) were numbered and then selected on the basis of matching numbers generated from a random numbers program. Such samples are large enough to make statements with 95% confidence that the proportions are within plus or minus approximately 16% of the true proportions. Only works written in English and published in the United States in 1984 were included.

Once the titles were selected, corresponding machine-readable Library of Congress bibliographic records from the Online Computer Library Center (OCLC) database were collected. Next, the rules that were applied in cataloging these items were determined. OCLC's *Books Format*, 3d ed., and an algorithm, based on Shaw,[10] were used as aids in determining which *AACR2* rules from chapter 21 were applicable for each work. Although some rules might have been applied more than once for a single item, they were counted only once. In addition, some rules were grouped together both because of their interrelatedness and because of the ease in evaluating them.

Definitions for access point, corporate body, entry, main entry, heading, personal author, and title were accepted as presented in *AACR2*. The following were specially defined for this study:

Cluster: Those rules that are related in the assignment of a single type of main entry.

Core: Those rules whose cumulative sum when arranged in descending rank order equals at least 51 percent.

RESULTS AND EVALUATION

The first hypothesis, that the chemistry sample would contain 3 clusters of rules within the core, was not supported. Two rules or rule groups (the rule for single personal authorship [21.4A] and a group pertaining to works produced under editorial direction [21.7A-21.7B]) were used in almost 53% of the cases (see table 1). Used only about 9% of the time, rules for corporate author/conference main entry (21.1B1, 21.1B2, and 21.4B) fell within the tail of the distribution.

The data are difficult to interpret because of overlapping rule usage; however, author main entry was clearly dominant. Rules prescribing author main entry were used in 22 of the 34 cases, or about 65% of the time. On the other hand, rules for title main entry and corporate/conference main entry were used in only 9 cases (26%) and in 3 cases (9%), respectively.

The second hypothesis, that only rules for assigning author main entry would fall within the core for economics monographs, was supported. The rule for single personal authorship (21.4A) was used 19 times (63.33%), qualifying it alone as the core. Out of the sample of 30 book records, 26 (86.66%) were as-

TABLE 1

DISTRIBUTION OF *AACR2* CATALOGING RULES
USED IN ASSIGNING ACCESS POINTS
TO BOOKS IN CHEMISTRY AND ECONOMICS PUBLISHED IN 1984

		Chemistry		Economics	
Rules	Application	f	%	f	%
21.1B1 21.1B2 21.4B	Corporate	3	8.82		
21.3A1	Author	2	5.88		
21.4A	Author	10	29.41	19	63.33
21.6A 21.6B1 21.6B2 21.6C1	Author	7	20.59	7	23.33
21.6C2	Title	1	2.94		
21.7A 21.7B	Title	8	23.53	4	13.33
21.9	Author	1	2.94		
21.12A	Author	1	2.94		
21.14A	Author	1	2.94		
	Totals	34	99.99*	30	99.99*

*Totals do not equal 100% due to rounding.

signed an author main entry, again showing the predominance of the rule for single authorship over all other rules. Title main entry rules were employed only 4 times (13.33%) in this sample.

The third hypothesis, that there would be a difference in the core of rules for the two disciplines, was supported. The books in the chemistry sample required over twice the number of rules for assigning main entry (15) that the books in the economics sample required (7). A Fisher's exact test of differences in proportions produced a z score of 2.037, significant at the .05 level of confidence. These frequencies and the difference in the number of rules required to assign main entry in the two samples indicate that there might be important differences between the literatures, differences that can be important considerations when building an expert system for automatic cataloging.

Implications regarding the feasibility and practicality of constructing an expert system for automatically cataloging materials of a specific discipline can be explored. To the degree that the distributions of rules used in the assignment of main entry are generalizable to the two populations, the knowledge base portion of an expert system containing rules from chapter 21 of *AACR2* would be smaller. If economics literature required fewer descriptive cataloging rules as well, then the practicality of designing an expert system for the discipline might be supported.

Only 12 of the 143 rules listed in chapter 21 (approximately 8%), were used at any one point in assigning main and added entries for the books in the economics sample. Even in the chemistry sample only 22 rules (approximately 15%) were used. The 7% difference may not warrant the development of separate systems. Rather, these two disciplines, as well as numerous others, might be grouped together within one system. Still, the idea for the development of an expert system for automatically cataloging materials of a specific discipline or groups of disciplines should not be rejected completely.

SUGGESTIONS FOR FURTHER STUDIES

Further studies are needed before more substantive conclusions can be drawn. In future investigations larger samples taken from a span of years would be advisable. These samples would add some important control over the likelihood of significant variance in publishing during any given year.

Another possibility would be to compare more contrasting disciplines. For instance, comparing chemistry with religion or American literature could reveal additional differences in rule usage. Still another research direction would be to compare two media, such as sound recordings and monographs. And, of course, comparing rule usage from other chapters of *AACR2* would yield important insights.

The design of this study presented some difficulties that need to be avoided in the future. The bibliometrics approach—defining cores, counting rules, and evaluating the results—did not reveal the complex interaction between the rules that were applicable in the various cases. The procedure can be likened to measuring a sphere with a ruler. For instance, rule usage frequently overlapped, making tabulation and evaluation difficult. Rule loops (i.e., a rule that sends the cataloger back to examine previously considered rules for another aspect of the cataloging task) were also problematic.

The use of an algorithm as an aid in counting rule usage was not foolproof as initially anticipated. Existing algorithms were designed to help catalogers manage the cataloging routines. Thus some of the rules have been excluded or compressed for efficiency in reaching the cataloger's goals—the production of records that conform to *AACR2*. Of the 143 rules in chapter 21, only 90 (63%) are included in the algorithm that was used in this study. Some—but not all—of the difference can be accounted for by rules that define or delineate scope of application, which in some cases would not be needed in the algorithm. Many of the excluded rules, however, are important for future studies concerning rule usage. To evaluate adequately the application of rules, a new algorithm should be designed with this purpose in mind.

CONCLUSION

The core of rules used for assigning main entry to books in the chemistry sample primarily included rules for single authorship and shared responsibility. Title main entry rules could also be included depending upon the way the data are evaluated. In the economics sample, the core of rules included only the rule for single authorship. However, when considered within the larger context, both disciplines could be accommodated by one expert system because only a small percentage of the rules from chapter 21 was applicable in both disciplines, and because the rules used for the economics sample represented a subset of the rules used for the chemistry sample.

The apparent differences between rule usage in the two disciplines might be useful for incorporating a system that accounts for probabilities. The weighting of certain rules according to the discipline to which the cataloged material belongs would aid the development of a more sophisticated system, one that required less decision-making on the part of the cataloger.

Although the results were not as anticipated, further studies in this area should continue. The creation of a subset of rules is necessary if an expert system for automatic cataloging is to be built. Future research may point the way to the best approach for achieving this goal.

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7. This quotation is taken from p.12 of the typescript version of Davies' "Outlines," originally presented at the 10th Cranfield Conference on Mechanised Information Retrieval, July 1986. It does not appear as part of the published version.
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Improving Access to New Interdisciplinary Materials

Howard Pikoff

The purpose of this study was to develop and evaluate a method for reducing the disciplinary constraints of traditional acquisitions lists. University faculty were provided an opportunity to review local Research Libraries Group acquisitions lists in subject areas of choice—across the entire Library of Congress classification schedule—and to have titles of interest held for pick-up. Response to the system was highly favorable. Participants requested an average of 7 different subject lists and in 95% of cases rated the system moderately to extremely useful.

New publications have high interest value in academic libraries. As a result, many libraries supply faculty with lists of recent acquisitions. Unfortunately, because they are labor intensive to produce, such lists typically focus on selected departments, along disciplinary lines. Hence, they underrepresent new holdings, particularly those in allied fields. At the graduate library of the State University of New York at Buffalo, for example, lists of new psychology books are distributed to the psychology department, new business titles to the school of management, and so on. There is not, however, sufficient staff to cover more than a handful of disciplines or to customize lists of holdings; for example, to inform interested psychologists or management professors of relevant new titles in sociology. With local acquisitions lists now available through bibliographic utilities, more sophisticated current awareness systems are possible. This paper reports an investigation of one such system.

Faculty from a cross-section of departments in the social sciences and humanities were invited to help test an acquisitions notification system called NEW ADDITIONS. The system allowed them to request bimonthly acquisitions lists in subject areas of choice throughout the *Library of Congress Classification (LCC)* scheme. In addition, limited document delivery was provided. That is, the library offered to retrieve and hold titles of interest for pick-up. Particular emphasis was placed on psychology researchers due to their strong interdisciplinary orientation (artificial intelligence, behavioral medicine, organizational dynamics, etc.).

PARTICIPANT SELECTION

The selection process was threefold. First, volunteers were solicited from a group of faculty with known interests in new acquisitions. One year prior to the present test, members of several departments had been offered a chance to re-

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ceive acquisitions lists in their disciplines. Some 300 professors (out of approximately 500) elected to do so and were sent monthly subject lists. One-third of this group was randomly selected and invited to participate in the present study. Of those contacted, 48 agreed to take part. A second group of participants came from the psychology department; 23 of the 35 department members expressed interest in the study. Finally, invitations were accepted by an additional 17 librarians and 4 administrators, yielding a total of 92 participants. In all, 21 departments were represented, with roughly 3 times as many faculty coming from the social sciences as from the humanities. This represents a marginal distortion of the 2:1 ratio of these disciplines at our university.

DEVELOPMENT OF INTEREST PROFILES

Lists were purchased from the Research Libraries Group (RLG) showing monthly acquisitions of our graduate library in one- and two-letter *LCC* categories. General social sciences material, for example, appeared on the list titled H: Social Sciences (General). Next in sequence came HA: Statistics; HB: Economic Theory; HC: National Production; and so on, through the entire *LCC*, one category to a list. While RLG output varied with monthly purchasing patterns, lists in an average of 200 categories were received each month.

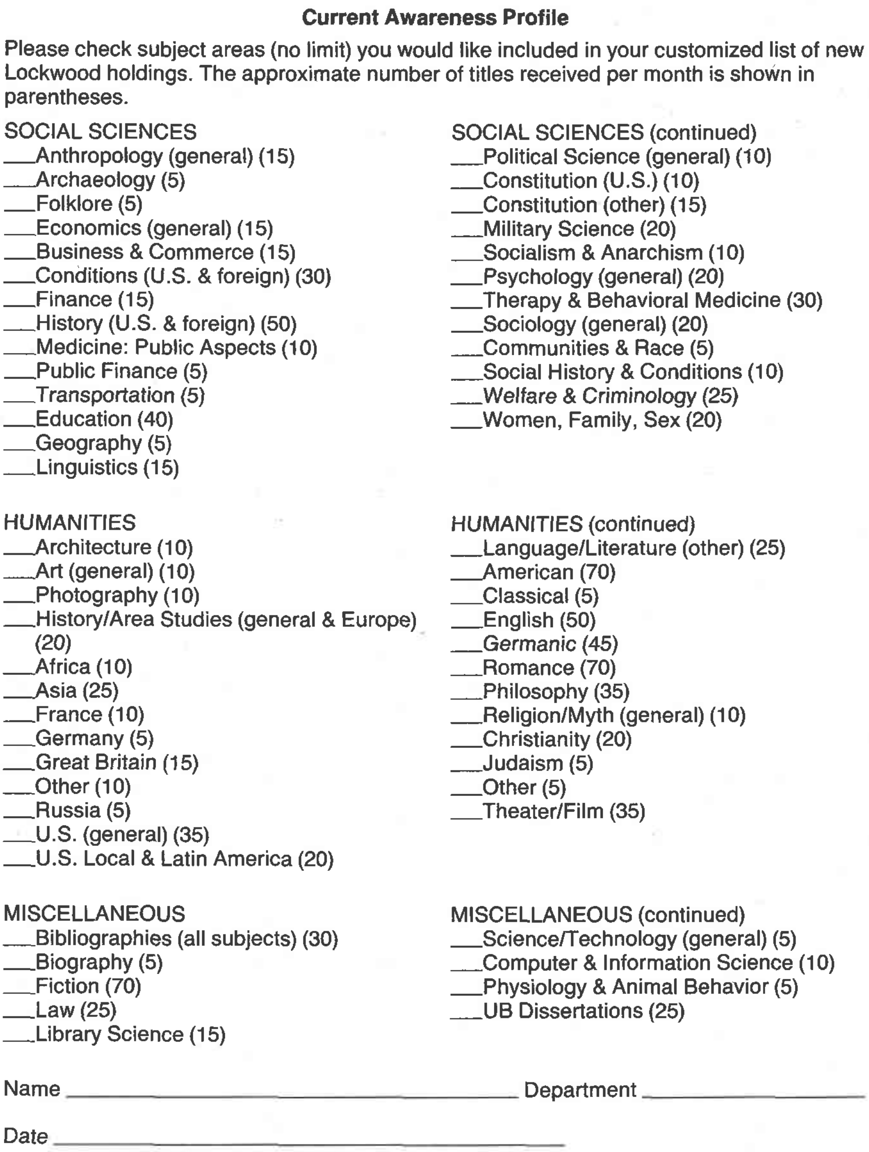
To determine which of these categories were of interest to particular faculty, it was necessary to arrange them in a readily comprehensible scheme that could be sent to participants for recording of individual preferences. It seemed inadvisable to simply list headings alphabetically or to use classification codes since the former arrangement failed to group related subjects, and the latter required familiarity with the *LCC*, within and outside one's discipline, for effective use. Instead, RLG headings were grouped into three broad divisions: social sciences, humanities, and miscellaneous. In the interest of brevity and to increase the utility of the scheme, we omitted categories with fewer than five acquisitions per month, and enhanced headings that appeared obscure or uninformative. For example, Diplomatics and Heraldry were dropped and National Production was changed to Economic Conditions. The resulting "Current Awareness Profile" contained 60 categories (see figure 1). It was sent to potential participants together with a description of the test project and instructions to check off all categories for which acquisitions lists were desired.

CONSTRUCTION OF DATABASE

A multipurpose database was created for storing profiles, generating mailing labels, and gathering use data on the project. Each record contained demographic (name, title, department) and profile (subject headings and classification codes of interest) data for a single faculty member. This information was used in several ways. Headings, for example, were printed on a front label, which then served as a table of contents for each person's packet of lists (see figure 2). Similarly, classification codes were printed on a back mailing label along with name and address (see figure 3). These codes were useful in assembling packets, as described below. Finally, the database could be searched and sorted on a variety of fields to determine frequency of headings by individual, department, discipline, etc.

ASSEMBLY OF PACKETS

The test consisted of two mailings during the spring semester—one in February and the other in April. Acquisitions lists for December and January were included in the first mailings while February and March were covered in the second. The initial step in assembling packets was to photocopy RLG master lists. By browsing the database under subject, we determined the number of requests for each classification code (i.e., list) and thus the number of photocopies that were necessary. Packets were then assembled by affixing a headings



Current Awareness Profile

Please check subject areas (no limit) you would like included in your customized list of new Lockwood holdings. The approximate number of titles received per month is shown in parentheses.

SOCIAL SCIENCES
___Anthropology (general) (15)
___Archaeology (5)
___Folklore (5)
___Economics (general) (15)
___Business & Commerce (15)
___Conditions (U.S. & foreign) (30)
___Finance (15)
___History (U.S. & foreign) (50)
___Medicine: Public Aspects (10)
___Public Finance (5)
___Transportation (5)
___Education (40)
___Geography (5)
___Linguistics (15)

SOCIAL SCIENCES (continued)
___Political Science (general) (10)
___Constitution (U.S.) (10)
___Constitution (other) (15)
___Military Science (20)
___Socialism & Anarchism (10)
___Psychology (general) (20)
___Therapy & Behavioral Medicine (30)
___Sociology (general) (20)
___Communities & Race (5)
___Social History & Conditions (10)
___Welfare & Criminology (25)
___Women, Family, Sex (20)

HUMANITIES
___Architecture (10)
___Art (general) (10)
___Photography (10)
___History/Area Studies (general & Europe) (20)
___Africa (10)
___Asia (25)
___France (10)
___Germany (5)
___Great Britain (15)
___Other (10)
___Russia (5)
___U.S. (general) (35)
___U.S. Local & Latin America (20)

HUMANITIES (continued)
___Language/Literature (other) (25)
___American (70)
___Classical (5)
___English (50)
___Germanic (45)
___Romance (70)
___Philosophy (35)
___Religion/Myth (general) (10)
___Christianity (20)
___Judaism (5)
___Other (5)
___Theater/Film (35)

MISCELLANEOUS
___Bibliographies (all subjects) (30)
___Biography (5)
___Fiction (70)
___Law (25)
___Library Science (15)

MISCELLANEOUS (continued)
___Science/Technology (general) (5)
___Computer & Information Science (10)
___Physiology & Animal Behavior (5)
___UB Dissertations (25)

Name ______________________________ Department ________________

Date ______________________________

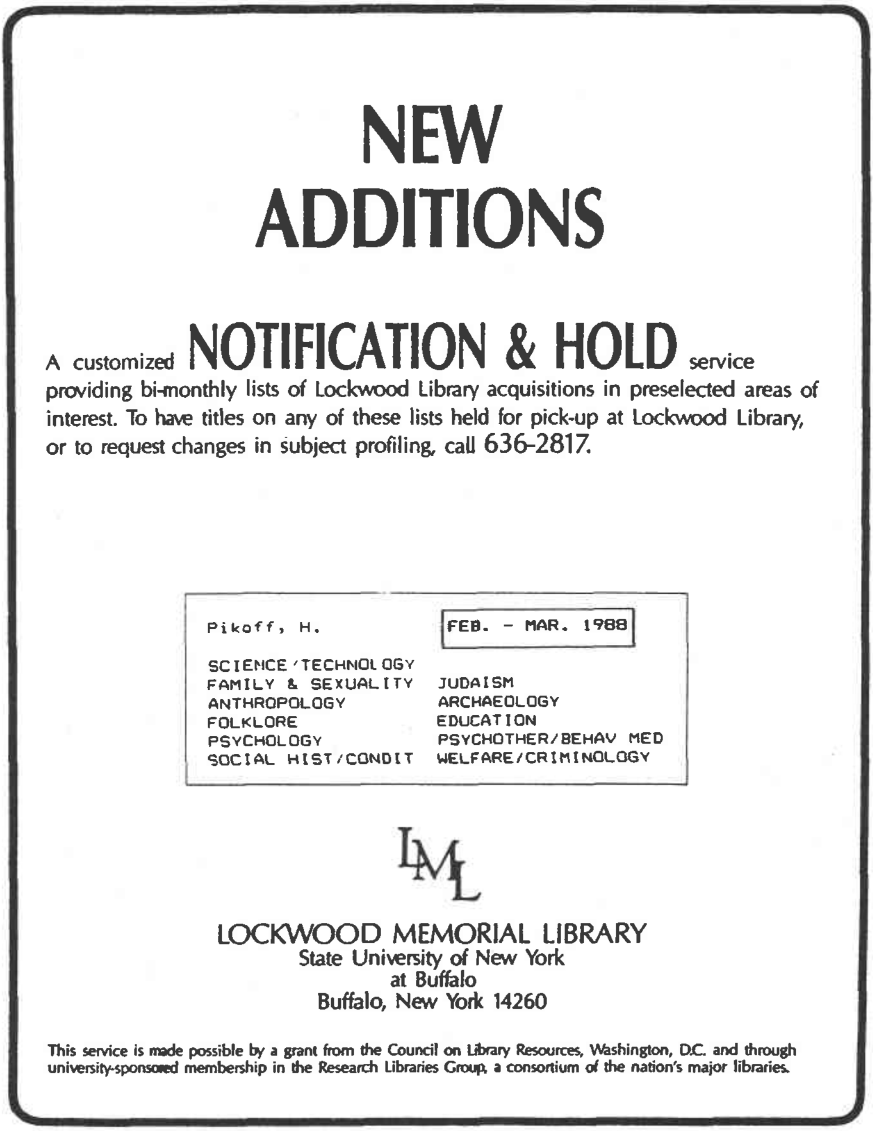
FIGURE 1.

PROFILING FORM SENT TO PARTICIPANTS.

label to a NEW ADDITIONS cover sheet, the corresponding mailing label to a back sheet, and then pulling lists for the particular packet as indicated by classification codes on the mailing label.

HOLD SERVICE

Faculty were advised of the hold service in the initial solicitation letter and on the cover of the NEW ADDITIONS packet. They were invited to call and re-



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```
Pikoff, H.                 FEB. - MAR. 1988

SCIENCE/TECHNOLOGY
FAMILY & SEXUALITY         JUDAISM
ANTHROPOLOGY               ARCHAEOLOGY
FOLKLORE                   EDUCATION
PSYCHOLOGY                 PSYCHOTHER/BEHAV MED
SOCIAL HIST/CONDIT         WELFARE/CRIMINOLOGY
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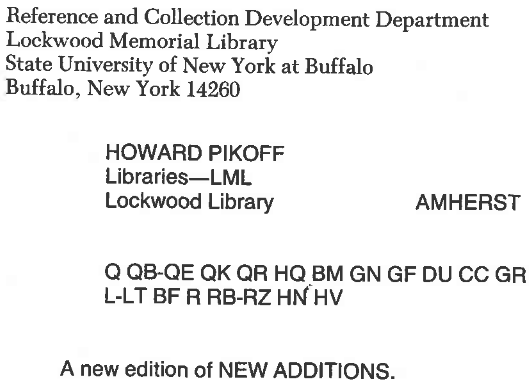
FIGURE 2.

Cover Sheet for Customized Packets.

quest any title(s) on a NEW ADDITIONS list to be held for pick-up at the library. Calls were taken by a secretary from 9:00 a.m. to 5:00 p.m. A student assistant was assigned the job of retrieving items from the shelves, initiating traces and recalls, and notifying faculty of request disposition.



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Buffalo, New York 14260

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Lockwood Library
AMHERST

Q QB-QE QK QR HQ BM GN GF DU CC GR
L-LT BF R RB-RZ HN HV

A new edition of NEW ADDITIONS.

FIGURE 3.

BACK SHEET FOR CUSTOMIZED PACKETS.

FINDINGS

USER INTERESTS

The most frequently requested topics are shown in table 1. Predictably, Psychology, with applied and cross-disciplinary components, was selected by a diverse group of faculty. A total of 37 people (including 23 in the psychology department), from 10 different departments, asked for this list. More surprising was the popularity of Women, Family, Sex; Art; and Bibliographies. Analysis of individual profiles further demonstrated the breadth of interdisciplinary interests. On average, users requested 7 different lists, with one person selecting a total of 45! The mix of requested subjects pointed to obvious as well as not-so-obvious linkages among disciplines. One anthropologist, for example, selected Archaeology, Economics, and Geography, while another chose Socialism, and Welfare and Criminology, along with Anthropology. An education professor requested Sociology, U.S. History, and Biography, and faculty in psychology expressed interest in everything from Philosophy and Computer Science to Linguistics, Medicine, and the U.S. Constitution. Of course, some of these choices could have been motivated by personal rather than professional interests. However, during subsequent questioning, the majority of faculty indicated that their principal use for these lists was academic, suggesting that many of the profiles did indeed represent crossover among the disciplines.

COSTS

Direct costs for one semester of NEW ADDITIONS amounted to roughly $400 for RLG lists (four monthly RLG mailings @ $100/mailing) plus $100 for photocopies and printing. In addition, the project required approximately 5 librarian hours and 10 secretarial/clerical hours per week.

USER SATISFACTION

NEW ADDITIONS was evaluated via questionnaire, supplemented by interviews and informal conversations. The questionnaire focused on the usefulness of the system as well as faculty preferences for scope of coverage, frequency, etc. It was sent to all 92 participants and returned by 64. By a wide margin, the system was judged a success. Fully 95% of faculty who examined the lists they were sent rated the notification component extremely (63%) or at least moderately (32%) useful. Only 3 people found it marginally useful, while 4 received, but did not use their packets. It must be emphasized, of course, that although the response rate for the evaluation questionnaire approached 70%, the 64 respondents represented a relatively small proportion of the potential user

TABLE 1

FREQUENTLY REQUESTED TOPICS

	No. of People Expressing Interest	Departments Expressing Interest
Women, Family, Sex	22	American Studies, Anthropology, Art, Education, English, Library, Psychology, Social Work, Sociology
Computer & Information Science	15	Education, English, Library, Library Studies, Management, Media, Psychology, University Services
Psychology	14*	Anthropology, Education, English, Library, Management, Modern Languages, Psychology, Social Sciences, Social Work, Theater
Art	13	American Studies, Anthropology, Art, Classics, Education, English, Library, Library Studies, Modern Languages, Theater
Bibliographies	13	American Studies, Art, Classics, English, History, Library, Management, Psychology

*Does not include 23 faculty in psychology department who also selected this topic.

population. Hence, a degree of caution is warranted in interpreting these findings.

The "hold for pick-up" component of the study drew mixed reviews. Those who requested that a title be held were well satisfied, with 84% of this group rating this service extremely (69%) or moderately (15%) useful. However, only 13 of 54 faculty responding to this question reported that they used the hold service. The principal reasons given for nonuse were unawareness of the service and the absence of relevant titles.

The remaining items on the questionnaire centered on faculty preferences. First, participants were asked whether they preferred a customized or a discipline-oriented notification system. They chose the former by a margin of almost 4 to 1. That is, most faculty wanted acquisitions lists on topics of choice rather than in a single, prescribed area of specialization. Respondents were equally divided on list specificity. Half favored broad lists (i.e., less chance of missing something); half preferred narrow lists (i.e., fewer but more relevant references). Finally, participants were asked to indicate how they used NEW ADDITIONS and how often it should be issued. Four options were provided: to keep up with academic interests; to keep up with personal interests; to alert students to new acquisitions; and other. Of 135 responses (multiple endorsements were permitted), keeping up with academic interests accounted for 44%, compared with approximately 25% each for personal interest and alerting students. "Other" uses—including instructional purposes and monitoring of publishing output—were noted by 6% of respondents. A frequency of twice each semester was preferred.

Additional feedback came in the form of requests for profile revisions. Participants were provided an opportunity to add or delete categories with each mailing, on the evaluation questionnaire, and during interviews. A clear pattern of revisions emerged. Of the 12 faculty requesting changes, all but one asked that topics be dropped from their profiles. These individuals wanted shorter and more relevant lists. Interestingly, the decision to omit categories appeared to be unrelated to the total number of references received. Deletions were requested by users who received more than 200 citations as well as by those who received fewer than 50. The issue of specificity, in fact, dominated user feedback. Those who suggested improvements asked for a more flexible search system, one that could produce finely tuned acquisitions lists on women in management, Dutch art, twentieth-century poetry, and the like. The hold component of the systems also generated discussion. We were frankly surprised by the relatively small number of hold requests and asked for faculty comment. All who responded, whether in person or by questionnaire, expressed enthusiasm for the hold service. Nonuse was attributed to lack of awareness, or failure to identify titles of interest during the test. This finding could have two explanations. On the one hand, the announcement of the hold service on the cover letter and top sheet of each mailing may have escaped the notice of many people. Alternatively, some faculty may simply have been disinclined to request holds. We did in fact get the impression that at least one person found the thought of having to pick up books by a deadline (another demand!) burdensome.

In summary, this test confirmed the feasibility of using RLG acquisitions lists as the cornerstone of a customized notification system for new holdings. Faculty used the system to keep up with new material of professional as well as personal interest, within and outside traditional areas of specialization. User response was highly favorable. Almost all participants rated the system moderately to extremely useful and, by a wide margin, expressed a preference for the customized over discipline-oriented approach. The one drawback was a lack of true search capacity. Lists could be combined but only according to fixed categories provided by RLG. We could not offer subsets of a particular heading, or titles by a given author, in a certain language, or containing specified key words. This was not a computer search service. Nonetheless, the project demonstrated that faculty have wide-ranging interests in new acquisitions and that these can be effectively satisfied through a customized notification system.

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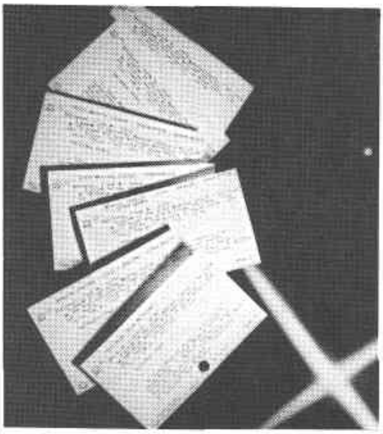

- Conversion

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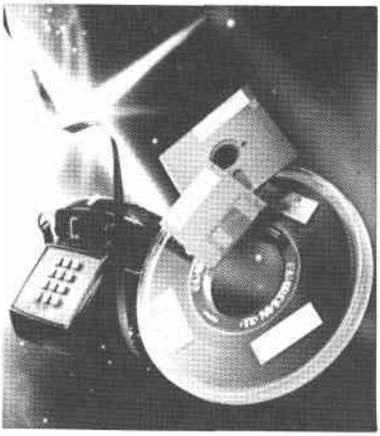

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A Taxonomy of Bibliographic Relationships

Barbara B. Tillett

A bibliographic relationship is an association between two or more bibliographic items or works. In an effort to provide the theoretical base for a conceptual model of the library catalog, past and future, the bibliographic relationship is examined here in detail. In this first of a series of reports, a taxonomy of bibliographic relationships is derived from an analysis of cataloging rules and types of bibliographic items.

As we examine computer systems in hopes of benefiting from their capabilities, it is useful to follow design structures currently popular for computer databases. The first step is a conceptual model to describe the entities, attributes, and relationships to be incorporated. One possible categorization of relationships is: bibliographic relationships, access point relationships, name relationships (including personal name, corporate name, conference name, geographic name, and title), and subject relationships. This study is focused on bibliographic relationships and provides a taxonomy of relationship types as a consideration for future designers of cataloging rules and computerized systems for cataloging and catalogs. In order to develop future systems, we should first have a firm understanding of the theoretical framework upon which catalogs are built. Specific manifestations of records and links within a catalog will vary with technology, but the conceptual structure of the catalog should be a lasting framework for future generations of catalogs.

A bibliographic relationship is an association between two or more bibliographic items or works. Some examples are circumstances of publication that link two or more bibliographic items, such as being attributed to the same author, or containing a variation of the same work, or items that are parts of the same series. Theoretically, bibliographic relationships could include association by virtue of shared characteristics, such as language, place of publication, publisher, and physical features of size, color of binding, etc. Although bibliographically significant for the description of items, such physical features have not been used to link bibliographic records in past cataloging

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Barbara B. Tillett is Head of the Catalog Department, University of California, San Diego. Invited paper received and accepted for publication January 2, 1991. (Note: Figure 1 and portions of text reproduced with permission of author and IFLA.)

Editor's Note: *Library Resources & Technical Services* is pleased to present a series of research reports on the topic of bibliographic relationships. These reports are derived from the author's 1987 Ph.D. dissertation, "Bibliographic Relationships: Toward a Conceptual Structure of Bibliographic Relationships Used in Cataloging."

rules. We are, however, starting to see such characteristics used as limiting devices in online catalogs. It may be that all common characteristics are potentially useful in the computer environment.

So, how are bibliographic relationships used in a library catalog? This entails asking ourselves how a student who is trying to obtain a copy of P. G. Wodehouse's *Leave It to Algy* finds out that the book is available in the library under its American edition title, *Hats Off to Algernon*. In the same spirit, how can an avid reader of spy novels, looking for a copy of Ian Fleming's *Dr. No* and finding all individual copies checked out of the library, determine that a copy is available in an anthology of Fleming's writings? Such questions are answered through the library catalog, where we expect both enlightenment about related material, and aid in finding the desired material by way of paths through the carefully structured world of the library's collection. One type of pathway is the bibliographic relationship, which provides a systematic display of related works and related items. We are directed to associated material and the direction helps to fulfill the stated objectives of the library catalog.

The classic statement of a catalog's objectives is Charles Cutter's "Objects," which he first published in 1876 in his *Rules for a Printed Dictionary Catalog*. Cutter's "objects" were later restated by Lubetzky and categorized into two "functions" of the library catalog: the finding function and the collocation function. That is, a library catalog should facilitate finding a desired item and should enlighten us about related items by displaying, in one place, all items that share a common characteristic, be it author, title, or subject, and informing us of relationships to other materials.

The first "function," to facilitate the location of an item in a library collection, is more complex than initially apparent. In order to locate an item, one needs both a bibliographic record with sufficient bibliographic description to uniquely identify the item and an identification of the library's holdings with information about the specific location of each volume and copy in order to retrieve the desired item from the library's collection. (The descriptive elements have been prescribed in the International Standard for Bibliographic Description. Specific holdings and location elements are yet to be internationally prescribed and ordered.) To get to that bibliographic record, methods for retrieving it from all the bibliographic records in the catalog must exist; hence the need for access points.[1] Additionally, to direct users from their starting point to the desired target item, or to locate an even better item, a retrieved record should reveal the availability of related items; hence the need for bibliographic relationships.

The second "function," to collocate items to enlighten the user about related material, obviously requires the grouping together of associated bibliographic records for display. The grouping may be accomplished through any common characteristic that two or more items share or through other types of bibliographic relationships.

While bibliographic relationships have been incorporated in library catalogs for well over a century, it is only since the late 1970s that they have undergone a formal examination. Both the development of online catalogs and the implementation of the second edition of the *Anglo-American Cataloguing Rules* (*AACR2*) have brought about a demand for more information, both theoretical and empirical, on which to base online catalog design and future cataloging rules.

Several authors have already noted the need for empirical data on which to base cataloging codes (e.g., Richmond,[2] Svenonius,[3] Gorman[4]). The data that do exist consist of the findings of a few empirical studies conducted to examine basic principles of descriptive cataloging (Baughman and Svenonius[5]) and some types of equivalence name relationships (e.g., Thomas,[6] Taylor,[7] Shore,[8] Watson and Taylor[9]), including categorizations of name variations and a suggested taxonomy of name relationships.[10,11] However, empirical data have not been available previously for bibliographic relationships.

Other than Panizzi's brilliant defense of the full and complete British Museum catalog, Cutter's analysis of the objectives of the catalog, and Lubetzky's monumental achievement of identifying basic cataloging principles for authorship and entry, few catalogers in the past have taken time to examine the theoretical basis for cataloging. Likewise, no empirical data have been gathered to make sound judgments for rules. Instead, cataloging rules have been based on the practical problem solving experience of the larger libraries dealing with ever growing catalogs. An exception is the formulation of the International Standard for Bibliographic Description to provide guidelines for describing bibliographic items. These international guidelines were incorporated into the current cataloging rules. Yet even today the Library of Congress distributes rule interpretations that are practical solutions to cataloging problems produced on an ad hoc basis as they arise without much regard to general conceptual principles. We have principles for authorship and guidelines for bibliographic description, but we lack principles for consistent, logical treatment of relationships.

The time has come to conduct an essential exercise often overlooked in the creation of cataloging rules and in the design of the computerized catalog. This exercise consists of making a model of the catalog to provide a conceptual structure on which the catalog and cataloging are based.[12] A conceptual structure of the library catalog is here defined as framework that prescribes what should be included in the catalog along with the necessary elements to describe those things, as well as links that should be made among them.

Three traditional data models could be examined: hierarchical, network, and relational, the latter reflecting the use of relational calculus or relational algebra in the manipulation of the records.[13] These early models have been used for computerized catalogs and other computer-based systems for retrieving bibliographic information, but several authors have noted that these models are inadequate for efficient manipulation of bibliographic information, which is textual and constructed of variable length fields.[14]

A model that appears to give a closer fit to bibliographic databases with variable field textual information is the entity-relationship model made popular by Peter Chen.[15] One interpretation of this model would label the things to be included in the catalog as "entities," their descriptive elements as "attributes," and the links as "relationships." Such a model could include at least four kinds of relationships in the library catalog: bibliographic, name, subject, and access point. In an effort to provide the theoretical base for a conceptual model of the library catalog, past and future, one element of the model, the bibliographic relationship, is examined here in detail.

LITERATURE REVIEW[16]

UNIMARC

Probably the significant works to date on bibliographic relationships are the relationship definitions in the *UNIMARC Format* (1977 and 1980) and the analysis of hierarchical relationships by Goossens and Mazur-Rzesos. UNIMARC is the universal MARC (*MA*chine-*R*eadable *C*ataloging) format for communication of bibliographic information. It was created in the 1970s within the International Federation of Library Associations and Institutions (IFLA) and was based on the MARC format created at the Library of Congress principally by Henriette Avram in the late 1960s. The definitions of bibliographic relationships found in the *UNIMARC Format* suggest a philosophical framework for bibliographic relationships by categorizing them into the following three types:

1. Vertical—the hierarchical relationship of the whole to its parts, and the parts to a whole—e.g., downward link: a serial to its subseries or to individual volumes of the series; upward link: the individual volume to its subseries and/or series.
2. Horizontal—the relationship between versions of an item in different languages, formats, media, etc.
3. Chronological—the relationship in time between issues of an item—e.g., the relation of a serial to its predecessors and successors.[17]

Taxonomic principles require categories to be mutually exclusive and totally exhaustive, and the three categories above are neither. They are not exhaustive, because they omit some relationships, such as those between copies, between a supplement and the work it accompanies, between a casebook and the work it analyzes, and between a book review and the book under review. It has been suggested that the UNIMARC categories could be generalized to include such relationships, but generalization obfuscates important differences in kinds of relationships.[18]

For example, the definition of UNIMARC's vertical relationship can be reworded as a two-directional link between a whole and its parts. If we generalize to include all hierarchical relationships, as was done by Goossens and Mazur-Rzesos (described in the next section), we could include both components of a larger whole and distinctive works where one item is predominant and one subordinate. But these are actually very different kinds of relationships and the fact that a single type of hierarchical diagram could be used to chart them both does not make them identical. In one of Goossens' examples, the diagrammed relationship identifies component parts; in another example, the diagrammed relationship delineates predominance and subordination. To generalize vertical relationships to encompass all types of hierarchies mixes very different kinds of hierarchies and thus very different kind of relationships. Similarly, generalizing the horizontal relationship to include the relationship that book reviews or casebooks have to the works they treat, involves ignoring that these constitute very different kinds of relationships to the versions of the same work in different formats, languages, etc. It would be preferable to simply add other categories, because over-

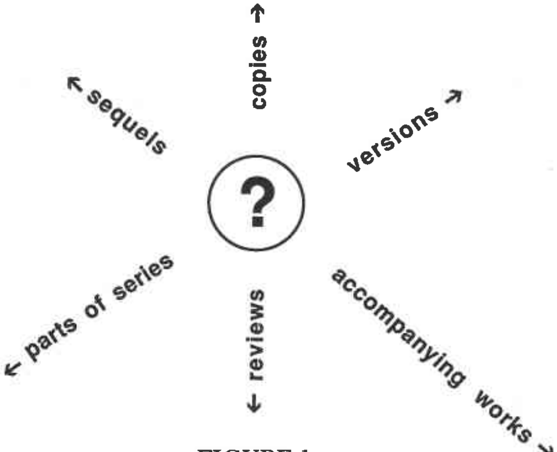

FIGURE 1.

IDENTITY RELATIONSHIPS.

generalization does not provide a constructive contribution to categorization.

Nor are the three UNIMARC categories mutually exclusive. The distinction between horizontal and chronological is vague, such as in the case of a handbook issued annually in updated versions, with slight title changes. The relationship between ensuing editions is both horizontal, i.e., appears in versions, and chronological, i.e., is issued annually with successively different titles. In short, the three categories developed for UNIMARC are undoubtedly a major step in the process of describing bibliographic relationships, but suffer from the problems noted above. Clearly, a new categorization of bibliographic relationships is needed.

GOOSSENS AND MAZUR-RZESOS' HIERARCHICAL RELATIONSHIPS

The article on hierarchical relationships presented by Goossens and Mazur-Rzesos, "Hierarchical Relationships in Bibliographic Descriptions: Problem Analysis," does not cite the earlier UNIMARC definitions, but their definitions must have been derived from that source, since Goossens was aware of the deliberations of the IFLA committee that developed the definitions.[19]

Goossens and Mazur-Rzesos introduce a schematic representation for hierarchical relationships to express simple and superimposed, complex tree structures. The purpose is to provide the theoretical basis for manual and computerized solutions to expressing such relationships. The authors note that the practical examples are limited to tree structures with a maximum of three levels, raising the question whether more than three levels would be needed in catalogs. Despite some difficulties with the English translation of their article, Goossens and Mazur-Rzesos successfully demonstrate the application of hierarchical tree structures to certain types of bibliographic material: complex periodicals, complex monographs, series, supplements, accompanying material, and analytical description. Specifically, the hierarchy with the highest level is called the set level, intermediate levels are called subset levels, and the lowest level is called the piece level; special notation is used for each level. This schema works very well for the true hierarchies, such as series and subseries, but the tree-structure does not work as well when expressing supplementary and accompanying parts. Tree-structures for supplements and accompanying works identify relationships that are not defined hierarchically.

Apart from Goossens and Mazur-Rzesos' extensive analysis of the hierarchical relationship, there has been no other in-depth analysis of bibliographic relationships.

MCCALLUM'S CLASSES OF BIBLIOGRAPHIC ITEMS

A possible approach to categorizing bibliographic relationships is suggested almost casually in an article by Sally McCallum that describes two classes of bibliographic items:

1. those related items that may assist the user in continuing to search but are not necessarily required in order to obtain the target item, such as former entries for serials and translations of the target item;
2. those related items that are required to obtain the target item, such as the host items for component parts.[20]

McCallum does not develop this functional classification. What she suggests is a dichotomous classification of relationships into items in containers and separately contained items. Items in containers are component parts having hosts; the bibliographic searcher is required to have knowledge of the host item to physically obtain the component. Separately contained items are those that exhibit other kinds of relationships. McCallum's categorization could also encompass relationships other than bibliographic; it could conceivably include the relationship of access points to bibliographic records and relationships among name variations and among related names. The categorization is offered as a classification of bibliographic items rather than a classification of bibliographic relationships, and, in fact, is too broad for our purposes.

SUMMARY OF LITERATURE REVIEW

In summary, only Goossens and Mazur-Rzesos' analytical study of hierarchical publications has begun to examine bibliographic relationships through rigorous analysis. Clearly, further study is needed. Moreover, since no information has been available on the nature and extent of bibliographic relationships in library catalogs, empirical studies need to be performed.

To address these needs, an analytical and an empirical study were conducted in 1984–1986 (as reported in the author's 1987 Ph.D. dissertation). This series of *LRTS* articles extracts the principal findings of those studies. The taxonomy of bibliographic relationships is introduced in this, the first article. Subsequent articles will: (a) describe each category of the taxonomy with respect to the linking devices and techniques used in past cataloging rules to provide the relationship; (b) provide a historical, evolutionary review of linking devices used in catalogs; and, (c) report the results of the empirical study.

TYPES OF BIBLIOGRAPHIC RELATIONSHIPS

This section presents a taxonomy of bibliographic relationships derived from an analysis of cataloging rules and types of bibliographic items. Each category of the taxonomy includes the operational definition of the type of relationship and a review of methods suggested in relevant cataloging rules for indicating the particular relationship.

The reader will recall from the introduction that bibliographic relationships exist when two or more bibliographic items or works are associated. Volumes have been written on the definition of a work and an item and the reader is referred to those by Lubetzky and Wilson.[21] Briefly, a work is the abstract intellectual content embodied in an item. An important element to remember in considering bibliographic relationships is that a given bibliographic item may be associated with one, many, or no other bibliographic items or works.[22] To illustrate the situation of a complex item related to many items, take the example of a publisher's series, which is part of a larger series and also has its own component parts issued in various editions with supplements. In this example, the relationships are as follows: the series to the larger series is *part-whole*, the series to its component parts is *whole-part*, the individual component to its earlier or later edition is *derivative*, whereas a supplement to an individual issue, or perhaps the whole series, depending on whether it claims to supplement the issue or the series, is *accompanying*. These types of relationships are described further below. Some bibliographic items might not in fact be related to any others, depending on the publication history, but all would have the potential of being related to some future item, such as a facsimile reprint. In short, bibliographic items may be related to one, many, or no other items, but have the potential of being related to items added to the catalog in the future.

Furthermore, the exact nature of the relationships and the structure they provide to the library catalog is one of the primary components in the conceptual structure of the catalog. By conceptual structure we mean the framework that encompasses the items to be described in the catalog, the elements necessary to describe these items, and the links or relationships among the items. It is the author's belief that as long as we clarify the basic conceptual structure of the catalog, we contribute a rationale to guide the creation and use of the catalog, regardless of the catalog's form. If we clarify the relationships among bibliographic items, we provide better defined paths and road signs for those searching the catalog.

In the following categories of bibliographic relationships, the requirements of mutual exclusivity and total exhaustivity are met, while simultaneously capturing the essence of the three

UNIMARC categories—horizontal, vertical, and chronological relationships. The seven types of bibliographic relationships derived from the present study are:

1. equivalence relationships, which hold between exact copies of the same manifestation of a work, or between an original item and its reproductions, as long as the intellectual and artistic content and authorship are preserved. Included here are copies, issues, facsimiles and reprints, photocopies, microforms, and other similar reproductions;
2. derivative relationships, called horizontal relationships in UNIMARC, which hold between a bibliographic item and a modification based on that same item. These include (a) variations or versions of another work, such as editions, revisions, translations, summaries, abstracts, digests; (b) adaptations or modifications that become new works but are based on earlier works; (c) changes of genre, as with dramatizations and novelizations; and (d) new works based on the style or thematic content of other works, as with free translations, paraphrases, imitations, and parodies;
3. descriptive relationships, which hold between a bibliographic item or work and a description, criticism, evaluation, or review of that work, such as that between an item and a book review describing it; also included are annotated editions, casebooks, commentaries, critiques, etc.;
4. whole-part (or part-whole) relationships, called vertical relationships in UNIMARC or hierarchical relationships by Goossens and Mazur-Rzesos, which hold between a component part of a bibliographic item or work and its whole, as with an individual selection from and the whole anthology, collection, or series;
5. accompanying relationships, which hold between a bibliographic item and the bibliographic item it accompanies, such that the two items complement each other equally or one item augments the other principal or predominant item. Examples are relationships between items and their accompanying materials, where one item is predominant and the other subordinate, as is the case with a text and its supplements; or where one item provides access to another item, as is the case with concordances, indexes, catalogs of libraries, etc.; or where the items are of equal status but have no specific chronological arrangement, as is the case with the parts of a kit;
6. sequential relationships, called chronological relationships in UNIMARC, which hold between bibliographic items that continue or precede one another, as between the successive titles of a serial, sequels of a monograph, or among the various parts of a numbered series; and
7. shared characteristic relationships, which hold between a bibliographic item and other bibliographic items that are not otherwise related but coincidentally have a common author, title, subject, or other characteristic used as an access point in a catalog, such as a shared language, date of publication, or country of publication.

These seven types of bibliographic relationships have all been provided for in cataloging rules through various methods using linking devices. An examination of the rules in the twenty-four cataloging codes studied indicates that relationships among bibliographic items and works have not changed over time. However, devices for representing relationships in the catalog have changed both in response to different technologies used to produce the catalog and in response to practices suggested by the Library of Congress. Incidentally, the influence of the Library of Congress on the structure of present catalogs should not be underestimated and is one of the reasons for the examination of the Library of Congress database in the empirical portion of this study. The next article further describes each of the categories of bibliographic relationships and identifies the linking devices used by various cataloging rules to indicate the relationship.

By clearly identifying the types of bibliographic relationships available for a given bibliographic item, we provide the flexibility to display to our catalog users clear road signs and paths that lead to related materials (see figure 1).[23] We may be able to design even better systems for finding and collocating bibliographic information once we clearly describe the building blocks for such a system. An examination of the currently available computerized library systems makes it clear we have a lot of work to do and that a conceptual model is sorely needed to guide our efforts.

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their definitions are discussed in an article by Sally McCallum and in Paula Goossens and E. Mazur-Rzesos' analytical study with only slight variation. See Sally H. McCallum, "MARC Record-Linking Technique," *Information Technology and Libraries* 1:281–91 (1982); and, Paula Goossens and E. Mazur-Rzesos, "Hierarchical Relationships in Bibliographic Descriptions: Problem Analysis," in *Hierarchical Relationships in Bibliographical Descriptions*, INTERMARC Software Subgroup Seminar 4 (Essen: Gesamthochschulbibliothek Essen, 1982). Page 14 gives the following definitions for the three bibliographic relationships: "1. the hierarchical relationships: the linking of the whole to its parts and of the parts to a whole (e.g., the relation between a series and its monographs); 2. the chronological relationships: the linking in time between succeeding issues of an item (e.g., the relation of a periodical to its predecessors and its successors); 3. the horizontal relationships: the linking of versions of an item (e.g., in different languages, local editions, reeditions, different formats, etc.)."

18. This is based on a telephone conversation with Sally McCallum on September 17, 1985. McCallum suggested that the horizontal relationships could be broadly interpreted to include book reviews. However, there is a difference in kind between relating versions or editions of an item and relating an item with a description of itself, such as a review, abstract, summary, or synopsis.
19. Within the Working Papers (particularly no.29, 1974) of the IFLA Working Group on Content Designators, which formulated the UNIMARC definitions, Paula Goossens is listed as an attendant at their meetings.
20. McCallum, "MARC Record-Linking Technique," p.282.
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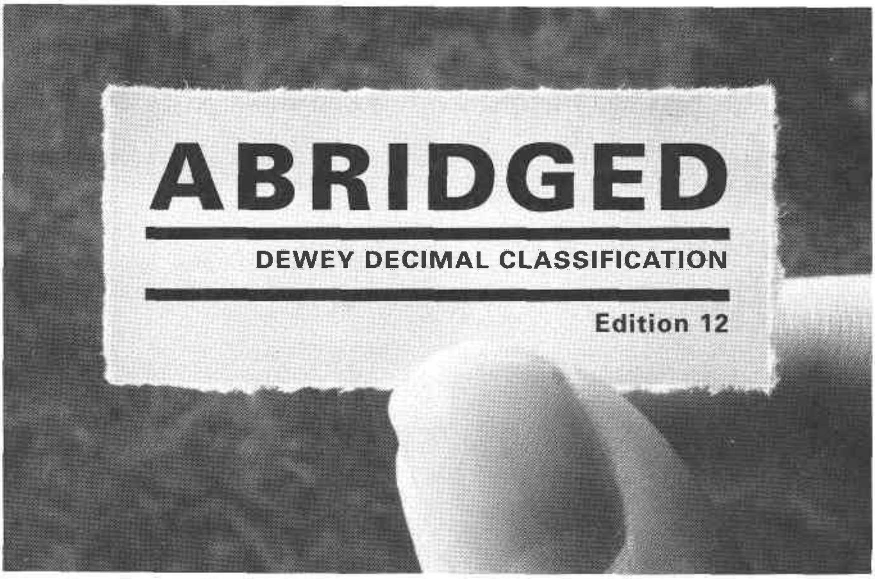
23. The figure was first published in Barbara B. Tillett, "Bibliographic Relationships in Library Catalogues," *International Cataloguing & Bibliographic Control* 17, no.1:3–6 (Jan./Mar. 1988).

CORRECTION

Errors occurred in Karen Schmidt's article, "The Education of the Acquisitions Librarian: A Survey of ARL Acquisitions Librarians," which appeared in the January 1991 issue. In table 5, for the year 1955, the Percentage of Recipients (column 3) is 1.39, not .39 as printed. In table 6, for the College of Charleston Acquisitions Conference, the Maximum Number of Times One Could Attend (column 2) is 4, not 8 as printed. *LRTS* regrets these errors.



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The Catalog of the Deutsche Staatsbibliothek as a Bibliographical Resource

John Rutledge, Will Owen, and Frank Newton

The microfiche edition of the card catalog of the Deutsche Staatsbibliothek (German State Library) in Berlin is examined, and its use and usefulness for research libraries are evaluated. The historical development of this library of record and its collections is sketched. As a quantitative supplement to the historical facts, the study reports the results of a survey of the catalog. Comparisons with several other bibliographic tools such as the OCLC database, the National Union Catalog, *and the Austrian National Library catalog are made. The card catalog of the Deutsche Staatsbibliothek provides a wide range of bibliographic information not available from the other tools.*

For a library is not just a picture gallery, which, having reached a certain size can content itself with moderate acquisitions; its destiny is rather to grow and to grow at an ever increasing rate.

Heinrich von Treitschke,
German historian[1]

THE JIGSAW PUZZLE OF GERMAN NATIONAL BIBLIOGRAPHY

Germany has never had a completed national bibliography. Only in recent years has the German printed patrimony come under better bibliographic control, thanks to enterprising publishers who have produced tools such as the *Gesamtverzeichnis des deutschsprachigen Schrifttums* and an ever-increasing number of library catalogs on microfiche. The catalog of the Deutsche Staatsbibliothek plays a role in completing the "missing" national bibliography for the German-speaking areas. This catalog, available on microfiche, records the holdings of a premier collection and is clearly an important bibliographic tool for myriad researchers in German studies.[2]

A principal aim of this study is to provide a clearer picture of the contents of the catalog, a catalog that will be useful for its wealth of bibliographical information, for citation checking and verification, and as a source for historians. Presumably it contains a great deal of material that is found neither in the Austrian National Library catalog nor in the Vienna University Library. It is also

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to be expected that many of the materials are not to be found in the *National Union Catalog Pre-1956 Imprints* (*NUC*) either. Indeed, this is one of the questions this investigation will answer.

HISTORY OF THE DEUTSCHE STAATSBIBLIOTHEK

Library history provides many clues about the holdings of the Deutsche Staatsbibliothek.[3] The Deutsche Staatsbibliothek (German State Library, henceforth DSB) dates back to the year 1661, when the Elector of Brandenburg-Prussia, Friedrich Wilhelm I, opened his private library—previously accessible only to those associated with the Court—to the scholarly public. The Elector's successors, the Prussian kings, actively built up the library as a status symbol. Frederick the Great proudly referred to it as "ma grande bibliothèque." In the nineteenth century, the then Royal Library became a modern research library, ranking with the great national libraries of the world. Just before World War I, the Royal Library, with Adolf von Harnack as general director, moved into its splendid quarters on Unter den Linden, the Champs Elysées of Berlin. After World War I, and the subsequent flight of the Hohenzollerns and the collapse of the monarchy, the library was renamed the Prussian State Library. The term was primarily an administrative one; the library served those territories that were part of Prussia, generally north Germany from the Rhine to what is now Latvia.

After the end of World War II, the library, renamed the Deutsche Staatsbibliothek, fulfilled central scholarly and library functions within the German Democratic Republic (GDR). The post-World War II history of this institution is often confusing. During the war the holdings of the DSB were evacuated to twenty-nine different storage areas, principally castles belonging to the aristocracy.[4] When Germany was divided after the war, the major national library was also split. In East Germany one finds the Deutsche Staatsbibliothek (German State Library); to this institution fell all the holdings of the DSB that had been stored in the Soviet Zone. In the West a new institution bearing the formidable title of Staatsbibliothek der Stiftung Preussischer Kulturbesitz (State Library of the Foundation for Prussian Cultural Heritage) was formed in West Berlin; to it were returned those volumes that had been stored in the Western zones of occupation.

The question, Who do the volumes really belong to? has been a controversial one. The Cold War was fought over books as well. The East Germans claimed that the holdings of the DSB belong to the German Democratic Republic because the site of the DSB was originally in East Berlin, in what was formerly GDR territory. The West Germans claimed that since the library was a central institution for all libraries in the Prussian system, the holdings rightfully belonged to all those provinces, including those now in the West. The reintegration of Germany will undoubtedly change the future of the two libraries as well. At present it seems likely that the collection will continue to be housed in separate buildings.[5]

Two large libraries grew up in the "divided city," one in East Berlin, the other in West Berlin. Books stored in West Germany were gradually returned to West Berlin. The East German library, adapted to the new Socialist order, also continued to grow. The card catalog itself is located in East Berlin.[6] The post-War years are naturally of less bibliographical significance (except for GDR imprints) than the earlier periods because of the restricted acquisitions program during that time—under the GDR administration the DSB ceased to attempt to collect on as broad a scale as it had formerly. The catalog examined here represents some three million volumes held by the East German library as of 1975. It still includes whatever was lost through war damage or is in storage. Its manuscript and book holdings are among the outstanding collections of the world.

HISTORICAL COLLECTION DEVELOPMENT AT THE DSB

The research value of a historic library's catalog depends on the breadth and depth of the collection it reflects. Knowledge about the collection can be revealed both by historical collecting patterns and by statistical analysis. Before we take a statistical look at the catalog it will be helpful to review some of the factors that influenced collection development at the DSB. This review clarifies the power of collection policy to shape a collection over time.

Like the Bibliothèque Nationale in Paris, the DSB in Berlin is a library of record and prestige; like the Bibliothèque Nationale, it enjoyed a legal deposit system. Although the legal deposit principle applied to the DSB, publishers did not comply until the early nineteenth century. Later in the century it was frequently violated by the library itself because its directors feared that the mass of publications (then 15,000 per year) would overwhelm the library with useless ballast. Legal deposit was limited to Prussian imprints—leaving out a great deal of German-language material.[7]

Other vagaries in collection development practice have molded the collection as well. Early twentieth-century belles lettres titles were frequently not kept.[8] For example, the DSB does not seem to hold a first edition of Bertolt Brecht's *Die sieben Todsünden der Kleinbürger* (*The Seven Deadly Sins of the Bourgeoisie*), but, on the other hand, there are many listings for Slavic translations of Brecht. Comprehensiveness, even then, was thought unachievable and even undesirable. No library in Germany ever undertook to collect the vast range of printed works produced in the German-speaking countries. The German research libraries focused their collections much more on academic publications than on belles lettres or gray literature.[9]

Since Germany was the formative center of Lutheranism, Lutherana is an important strength of the collection. The collection of German eighteenth-century literature is weak, in part because Frederick the Great did not support German literature, preferring French (his own writings are in French).[10] This deficiency has to some extent been overcome by retrospective purchasing, but the collection is by no means gap-free.

Early in the nineteenth century the DSB became the library for the new university in Berlin, serving Berlin's scholarly community. The acquisitions program turned toward the academic. Systematic gap-filling was undertaken to help make the collection more adequate as a national library. It was Director Friedrich Wilken's (in office 1817–1840) intent to make the library an "arsenal for scholarly research" (the military metaphor is surely not accidental).[11] The DSB never had the intention of collecting every imprint; there was always discrimination in favor of the more scholarly work.

The catalog does not reflect the full range of holdings of the DSB because there are certain exclusions by format. It systematically excludes manuscripts, portraits, graphic materials (views of cities, maps), music scores, newspapers, and most children's literature.[12] Many of the library's strengths are not monographic and are not included in the catalog. These limitations should be borne in mind, but we will attempt to gauge the usefulness of the catalog in terms of what it includes, namely monographic and serial titles.

USING THE DSB CATALOG

The DSB catalog exists in two parts: a hand-written first half covering the beginnings to 1908, and a second in card format covering the later period, 1909–1975. The pundit, allegedly a French diplomat, who originally said that he liked Germany so well that he was glad there were two of them probably would not say the same for the catalog of the DSB. Because two separate alphabetic listings are maintained, a dual search is usually required. Using the DSB catalog cannot be called an unalloyed pleasure. Indeed, it can hardly be called a pleasure at all, unless one accepts the deciphering of various Germanic library hands as an absorbing challenge. Small comfort can be taken from the fact that the scripts are well controlled, internally consistent, and generally quite legible.

Filing order follows the system known as the "Prussian Instructions," which generally obtains in older German bibliographic tools.[13] A work will be listed by author's last name, if there is an author. Multi-author works file under the first author's name. An anonymous work files under the title. Under so-called "grammatical organization" titles are entered under the first substantive in the nominative case in the title. Thus the title *Political Dialogues* files as *Dialogues, political* under the first noun; they would follow *Dialogues, personal.* Most American-trained researchers find this system cumbersome. Proponents of this system maintain that the modern, strictly alphabetical organization is soulless and mechanical. The first noun (or *regens*) functions—in lieu of true subject access—as an alternative strategy for some types of searches. Several works by one author are filed by title order under the author's name. Collected works, selected works, fragments, and excerpts come before the alphabetical listing by title. Different editions of the same work are arranged chronologically. Works by authors having the same name are interfiled! An exception to this is well known authors, who do receive separate listings. For serial titles an added quirk is introduced: if a title was begun before 1908 and was subscribed to before 1908 by the DSB, it appears in Part 1 and does not appear again in Part 2.

SAMPLING A MICROFICHE CATALOG

The two parts of the catalog together comprise more than 4,000 microfiches. Four hundred and ninety-one of these fiches were selected for examination by means of a systematic sampling technique.[14] Starting with about 500 items, we were free to discard cross references and "duds," mostly illegible copy; our sample yielded 468 usable citations. The Microform Reading Room staff produced print-outs from the microfiche for study and comparison. Some of the entries in the hand-written catalog (Part 1) had to be painstakingly deciphered (not simply read) before they could be searched against other bibliographic utilities. (As a practical matter we considered ourselves lucky when we could find a related edition on OCLC and use that to help us decipher the hands.)

STATISTICAL PROFILE OF THE CATALOG

IMPRINT AND LANGUAGE

Standard bibliographical building blocks exist that are of perennial interest. These include (1) place of imprint, (2) language, (3) subject matter, (4) date, and (5) format. (Beyond these most basic elements the DSB catalog frequently gives pagination, publisher, size of book [quarto or octavo], and call number. Twentieth-century entries usually indicate series titles.) The random sample of the catalog enabled us to reach some conclusions about the collections it represents. The tables present a statistical analysis of the basic elements, beginning with the principal countries of imprint (see table 1). (Percentages might not add to 100 due to rounding.)

The study only marginally sustained our original prediction that most of the imprints would be from Germany. Fifty-five percent of the imprints are from "Germany,"[15] making it the country representing the largest percentage of titles. The English-speaking countries are the second largest contributors to the collection (11.3% total) with almost 6% from the United Kingdom and just slightly less from the United States. The Slavic world is well represented with 9.2% of which some 6.8% are from Russia. France is represented by 5.7% (see table 2).

The language in which a book is printed closely parallels that of its place of publication. In addition, one normally expects a "national library" to document its own language and culture

TABLE 1

PLACE OF IMPRINT

Place	Frequency	% of Total
Germany	259	55.0
U.S.S.R./Russia	32	6.0
U.K.	28	5.9
France	27	5.7
U.S.A.	24	5.0
Italy	18	3.8
Scandinavia	14	2.9
Poland	9	1.9
Switzerland	8	1.7
Hungary	7	1.5
Holland	7	1.5
Austria	6	1.3
Czechoslovakia	6	1.3
Belgium	4	0.9
Spain	4	0.9
Canada	2	0.4
Other	13	2.8
Total	468	98.5

TABLE 2

LANGUAGE OF IMPRINT

Language	Number	% of Total
German	252	53.8
English	59	12.6
Latin	38	8.1
French	34	7.3
Russian	29	6.2
Italian	10	2.1
Polish	9	1.9
Dutch	6	1.2
Hungarian	6	1.2
Czech	4	0.8
Spanish	4	0.8
Danish	3	0.6
Other	13	2.8
Total	468	99.4

particularly thoroughly. Yet, only 53.8% of the titles in the DSB catalog are in German—a testimony to the catholicity of its historical collections. English is the language of 12.6% of the titles. This figure corresponds roughly with the total number of imprints from the United States and the United Kingdom. French-language titles made up 7.3% of the sample. It may be that French-language items are more thoroughly represented than apparent; there could simply be fewer French than English-language titles available. Russian-language titles made up another 6.2% of the sample, although the Slavic languages as a block comprised 10% of the sample. This relatively strong showing of Russian is probably due to the many titles acquired from the leading "socialist neighbor state" after World War II, but it may also indicate relatively strong coverage of Slavic titles since generally these languages are less accessible than the Western European languages.

TABLE 3

DATE OF IMPRINT OF SAMPLE TITLES FROM THE DEUTSCHE STAATSBIBLIOTHEK

Date	Frequency	% of Total
1480–1599	13	2.7
1600–1699	15	3.2
1700–1799	28	6.0
1800–1849	26	5.6
1850–1859	9	1.9
1860–1869	7	1.5
1870–1879	15	3.2
1880–1889	12	2.6
1890–1899	20	4.3
1900–1909	38	8.1
1910–1919	42	9.0
1920–1929	59	12.6
1930–1939	53	11.3
1940–1949	20	4.3
1950–1959	31	6.6
1960–1969	54	11.5
1970–1979	23	4.9
1980–	1	0.2
no date	2	0.4
Total	468	93.5

TABLE 4

SUBJECT CLASS OF MATERIALS IN THE DEUTSCHE STAATSBIBLIOTHEK

LC Class	Frequency	%*
R	46	9.8
BL-BX	44	9.4
Q	39	8.3
DD	35	7.5
PT	27	5.8
HD	16	3.4
K	14	3.0
PQ	14	3.0
S	14	3.0
Z	13	2.8
PG	12	2.6
T	12	2.6

*n = 468

Table 3 illustrates the dates of imprint of the sample. One would not expect collecting history to parallel publishing history perfectly, yet there are close correlations. The growth in the DSB collections between 1890 and 1940 follows German book production, which went from 18,000 titles in 1890 to 34,264 in 1930.[16] The table shows that about one quarter of the DSB's holdings date from the Weimar period, which saw a boom in German book production, and in many ways was a golden period in German cultural history. By 1940 book production had dropped back to 13,782, before it plunged to 5,304 in 1944—still an amazing volume for a country in the throes of war. The strong showing for the 1960s (11.5%) could be due to East Germany's own *Wirtschaftswunder*.

SUBJECT CONTENTS

To arrive at a better understanding of the subject areas represented in the DSB, we assigned an LC class number to each entry and tabulated the results by subject. In cases where the item was found on OCLC or in the NUC, we borrowed the class number (if it had an LC call number). Table 4 shows statistically significant aggregates of the DSB catalog by LC subject class. Subject classes comprising less than 2% of the total have been excluded from the table.

The subject areas most frequently represented in the DSB are, in order of frequency: medicine (R), theology (BL-BX), the natural sciences (Q), German history (DD), German literature (PT), law (K), agriculture and technology (S and T), industry (HD), Romance literatures (PQ), and Slavic literatures (PG). The high percentage of medical and law titles represents, in part, the many dissertations held by the DSB. Given the special place occupied by the dissertation in German scholarship—it is still required for the medical degree, for example—we were not surprised to find that dissertations represented 15% of the sample. The relatively low percentage for German literature corroborates the historical fact that German literature has been neglected during various periods of DSB's history. Not even one percent of the collection was in military or naval sciences.

COMPARISON WITH THE OCLC DATABASE AND *NUC PRE-1956 IMPRINTS*

American libraries considering purchase of the DSB catalog on microfiche will want to know what percentage of the materials recorded in that catalog can be verified in other bibliographic sources that they already own. In order to measure this, the entire sample drawn from the DSB catalog was searched in the OCLC database and in the *National Union Catalog, Pre-1956 Imprints*.

The OCLC database is an international bibliographic utility containing more than 20,000,000 items (seven times the size of the DSB). Duplication was not as high as expected, perhaps because so many of the items in OCLC are relatively recent—or conversely, because the DSB contains so many older items. In fact, only 38.9% of the sample was found in OCLC. We found a related edition in another 8.3% of the cases. Still, 52.8% of the sample could not be found in OCLC. Once German libraries start contributing to OCLC these percentages will begin to change slightly, but the percentage of older materials added to the database is likely to be small for the immediate future.

The *National Union Catalog* could be expected to contain a higher percentage of older materials than the OCLC database, but not as much as the German State Library. How much more does the DSB contain than the *NUC*? is a question of some interest: All the items in the sample that were published before 1956 were checked against the *NUC* (including supplements). We found exact matches for 60.04% of the items in our sample. Related editions were found for another 8.33%. About 40%, then, of the holdings of the DSB cannot be verified in the *NUC*. Many of these titles are in German history, another large portion is theology, and some are in the natural sciences and technology.

Twenty-six percent, or roughly one quarter, of the items in the DSB sample could be found neither in the *NUC* nor OCLC, the two first-recourse reference tools. This is the bibliographical golden core of the DSB catalog. Items not found in OCLC or the *NUC* fell into quite predictable categories: German history, medicine, the hard sciences, and German literature. Most are German imprints in the German language. One third of the titles not found in the two main sources are pamphlets (compared with 15% of the overall sample). The DSB, then, is a good source for German-language titles in the subject areas mentioned above.

THE DSB AND THE AUSTRIAN NATIONAL LIBRARY

Now that microfiche catalogs have become fairly standard reference tools, comparisons between them take on added interest. We were particularly keen to compare the catalog of the Deutsche Staatsbibliothek with that of the Austrian National Library (ANL), which we had previously studied.[17]

These two microfiche catalogs differ widely and as one looks more closely, the differences become even greater. Size is the most obvious difference; the ANL catalog is significantly smaller than the DSB catalog. All other factors being equal, one might look first in the DSB catalog because of the sheer size of the database. However, the ANL is easier to read since it is all typed. Slightly more than half of the titles in the ANL catalog, like the DSB, are German-language and 57% of the items were printed in Germany (40.5%) or Austria (16.7%). But while English is the second language of the DSB, Latin (11%) is the next largest group in the ANL. This probably does not mean that the Latin holdings at the ANL are stronger; rather, it is a result of the fact that the ANL catalog has no listings beyond 1929 and publication in Latin was proportionately greater before that date. (The size and authority of English-language book production assumes greater dimensions after that date.)

The Slavic group is also differently represented in the DSB than in the ANL. Polish and Czech are better represented in the Austrian library, but Russian accounts for less than 1% of the holdings, compared with 6.2% in the DSB. This is without doubt due to the systematic collection of Russian materials after World War II, when the DSB was in East Germany. Many of these Russian titles are in science and technology. Italian holdings are stronger at the Austrian National Library, reflecting geographical proximity and political liaisons. The influence of geography can be seen again in a comparison of the Scandinavian holdings: 1.7% in the ANL versus 2.8% in the DSB.

Which catalog should a user prefer? The ANL requires only a single search and it is certainly easier to read. But it is not as "up-to-date" as the DSB. When looking for items that cannot be found in more standard sources, the ANL offers greater variety of imprint and language, and possibly subject matter, while the DSB focuses more on Germany and its culture (including the hard sciences). Curiously, very few imprints in the DSB are from Austria, and the relative strength of Czech materials in the ANL contrasts with the paucity of the same in the DSB. Searches for Austrian materials in the ANL can be supplemented by use of the Catalogue of the University of Vienna Library, also available on microfiche.

CONCLUSIONS

In conclusion, the DSB is a powerful research and reference tool that provides basic bibliographical information about a wide range of books in standard fields of inquiry. It is a major tool for German studies, theology, history of science, Central European literatures, law, and medicine.

A comparison of the DSB with its southern sister library, the Bayerische Staatsbibliothek, would be extremely interesting, but more difficult because the terminal date for the Bavarian library is 1840. This catalog was not available to us for consultation. It differs from the other catalogs in that a paper copy is also being made available. While this catalog will obviously change the jigsaw puzzle of German bibliography when it is available, it is too early to make comparisons between these very different bibliographical tools. With the completion of the Bayerische Staatsbibliothek catalog, the German "bibliographic arsenal" should be nearly complete, though in its multiplicity, no less daunting to the user.

Availability of DSB's catalog remedies, in part, the lamentable lack of a German national bibliography for the earlier period. We have seen growth in German bibliographical control through a technology that Treitschke, speculating on the growth of libraries, could not have imagined. Because of the price of these tools, the position they occupy in research strategy, and the level of anticipated use, they are ideal products for resource sharing arrangements.

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1. "Denn eine Bibliothek ist nicht eine Galerie, die, auf einer gewissen Höhe angelangt, sich mit mässigen Erwerbungen

begnügen kann; ihre Bestimmung ist zu wachsen, in steigender Progression zu wachsen." Cited by Werner Schochow in "Die Erwerbungspolitik der Kurfürstlichen und Königlichen Bibliothek zu Berlin vom 17. bis zum 19. Jahrhundert," in *Bibliothek und Buchbestand im Wandel der Zeit: Bibliotheksgeschichtliche Studien*, ed. by Franz A. Bienert and Karl-Heinz Weimann (Wiesbaden: Otto Harrassowitz, 1984), p.7.

2. Deutsche Staatsbibliothek, *Druckschriften bis 1974: alphabetischer Katalog* (Hildesheim: Olms, 1985).
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9. Franz Georg Kaltwasser, "Sammlung deutscher Drucke 1450–1945: Ein kooperatives Erwerbungsprogramm," *Zeitschrift für Bibliothekswesen und Bibliographie* 37. no.2:115 (Mar.-Apr. 1990).
10. For a fuller treatment of the DSB and Frederick the Great, see Paunel, *Die Staatsbibliothek zu Berlin.*
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12. Peter Kittel, *Die Deutsche Staatsbibliothek zu Berlin und ihr alphabetischer Katalog bis 1974* (Hildesheim, New York: Olms, 1984) p.17. This brochure and guide, which is part of the microfiche edition, is extremely helpful in practical information about the catalog and its history.
13. The basic principles of organization and a brief history of the library are also given in Kittel's guide. For a more thorough and theoretical treatment see Helmut Allischewski, *Retrieval nach Preussischen Instruktionen: Darstellung der Recherche-Probleme in "preussisch" geführten Katalogen anhand einer Systematik der Schriftenklassen* (Wiesbaden: Reichert, 1982).
14. Fiche were selected using a systematic stratified sampling technique. Each fiche bears a number; those ending in 3, 5, 8 or 0 were chosen and the bibliographic entry in the upper right hand corner was photocopied for inclusion in the study. While not true random sampling, this technique produces a cross-section of the catalog's content in that position on the fiche is in no way correlated with the bibliographic information.
15. In this study "Germany" means the historic areas that were German-speaking before World War II, whether or not they are a part of current East or West Germany. Thus a Danzig (Gdańsk) imprint in German counts as "Germany." The intent is not to be imperialistic, but

to treat the catalog as an instrument with a culture and a history.

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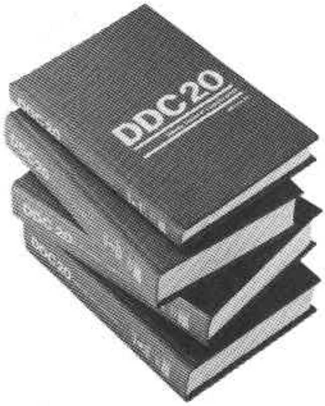

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Automated Systems and Subcollection Designations

Margie Epple and Bernice Ginder

Physical subcollections within academic libraries are defined, and subcollection designations in bibliographic utilities (such as RLIN and OCLC), local integrated systems, and paper catalogs, are examined. Variations in subcollection designations imposed by the automated systems are compared. Issues related to subcollection designations in an automated environment and in the transfer of subcollection designations from manual records to utilities and from utilities to local systems are identified.

Subcollection is the term used to describe the many distinct collections that make up the holdings of academic libraries. These groupings of materials are generally arranged in separately classed sequences and may be arranged by *Library of Congress Classification* (*LCC*) number, accession number, or alphabetically by title or author. Some subcollections are physically grouped in special collections areas of libraries, but just as many are dispersed throughout the circulating and non-circulating stack areas of the library.

TYPES OF SUBCOLLECTIONS

Many subcollections are common to most academic libraries: reference, microfilm, periodicals, media, government publications, stacks, reserve, etc. Other subcollections are unique to specific libraries. For instance, some libraries maintain separately shelved subject collections that were donated by library benefactors or former departmental collections that are now housed and managed as part of the university library's collections.

In general, subcollections can be divided into five distinct categories:

1. Location. Materials located in these subcollections are distinguished by location in the building and include large collections such as reference and stacks, but also include smaller ones housed in locations like reference offices, technical services areas, or new book shelves. These collections usually contain diverse subjects, and different formats might be shelved together. These subcollections also contain the largest collections in the libraries—stacks—and also the collection that is, in most cases, non-circulating: reference. The materials may also be subdivided by subject or physical format.
2. Subject and/or donor-collector. These collections are physically grouped together because of their distinct subject identity or because the collection was donated to the library with the stipulation that the materials remain together. Ex-

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amples could be women's studies collections or New Jersey (or other state) collections.

3. Physical format. The materials in format subcollections are grouped together because they require special shelving arrangements and in most cases are not classed by *LCC* number. Periodicals and media materials usually fall into this category.
4. Size. Libraries, to make the most efficient use of available stack space, use designations such as FOLIO or OVERSIZE for materials shelved in a stack area with expanded shelf height.
5. Other characteristics. Some materials are grouped together because of rarity, value, or physical condition as determined by specialists in appropriate subject areas. Materials in high demand, such as reserve collections, if the library has that designation in a permanent location, would also fall into this category. The materials may be subdivided by subject or format as well.

BIBLIOGRAPHIC TREATMENT OF SUBCOLLECTIONS

Subcollection designations were, and are, an integral part of the call number structure at most libraries and with the growth of diversified library collections and material formats, the use of a classification number with a subcollection designation has become commonplace.

Designations representing physically distinct subcollections have been used on manually typed catalog cards as well as machine generated cards from the Research Libraries Information Network (RLIN), Online Computer Library Center (OCLC), and local bibliographic system databases. Because the designation uses are unique to local agencies, they are not normally part of a standard Library of Congress (LC) catalog record. Basic texts such as Lehnus's *Book Numbers* or LC's *Subject Cataloging Manual: Shelflisting* address classification and book numbers but do not discuss subcollection designations or how to incorporate the symbols into a logical classification scheme.[1,2]

Other methods have consequently been created to identify membership in a subcollection group. Using manually typed card sets or those obtained from LC or a commercial vendor, subcollection designations might be typed on, applied with a rubber stamp, handwritten, or the entire card covered with a plastic jacket.

When machine generated cards, produced via OCLC, RLIN, or other bibliographic utilities, became available, libraries, in most instances, gained the ability to incorporate subcollection designations into their libraries' individual catalog records. Libraries had the option of making subcollection designations a part of the descriptive portion of the bibliographic record or incorporating them as part of the call number. In both instances, online bibliographic records had to be modified at the point of cataloging to accommodate these additions or changes to the call number. For example, the designation REFERENCE (as part of the call number) could be added when an item was cataloged and a designation note such as "Shelved in Reference Office" could also be added to the descriptive portion of the online record. Machine-generated catalog cards could then be produced with subcollection designations already printed on them.

Working within a paper card environment of cards produced locally or from a utility is labor intensive, as numerous changes to paper records are required when materials are transferred from one collection to another (i.e., REFERENCE to STACKS.) Online records can theoretically eliminate much of this work, but as libraries move their paper card bibliographic records to online local systems, the systems must be able to accommodate subcollection designations and changes in subcollection designations with a minimum of effort.

In libraries where subcollections are uncataloged the question of whether and when to add them to the online system arises when the catalog is to be automated. Librarians at California State University at Chico outlined the philosophical and practical concerns of converting non-shelflist collections. During the process of examining their collections, they discovered fifty-seven subcollections, revealing that almost every public service department of the library had at least one such collection.[3] In an online environment, non-shelflist collections need to be considered and their treatment adequately planned for. Emily Fayen, arguing in favor of retrospective conversion for subcollections, states that the online catalog, if it is comprehensive, can provide an enormous service to users by making information about these different collections available in one place.[4]

In addition, as these newly created machine-readable cataloging records begin to be used for more than just card production, and become the primary source for creating a bibliographic database for a library's local integrated system, an understanding of how bibliographic utilities and local systems approach subcollection designations is important.

SUBCOLLECTION DESIGNATIONS IN BIBLIOGRAPHIC UTILITIES AND LOCAL INTEGRATED SYSTEMS

BIBLIOGRAPHIC UTILITIES

Exactly how to add subcollection designations to a record in a utility is not very clearly defined because, as Carter and Bruntjen suggest in their discussion of data conversion, the location information is not as well developed in most online bibliographic systems as the description of the item itself.[5] The descriptive portions of bibliographic records were standardized with the introduction of the MARC format, resulting in a consistent approach to the use of tags, indicators, and subfields, but this consistency has not carried through to location or holdings information. In contrast to the MARC format for bibliographic data, there are currently no nationally implemented standards for displaying or storing holdings information, leaving this important area open to interpretation by programmers and local library staff.

In RLIN, member libraries have two options for entering subcollection designations. First, the subcollection can be coded as a library location and entered in the LOC field or 950 tag $l. This will, however, require a profile to be established. Alternatively the subcollection designation can be entered as a stamp in the LCAL $d field or 950 tag $d. In choosing to use the stamp field, the need to request profile changes when making local additions or changes to subcollection designations is eliminated. The number of stamps is not limited by RLG, the field is not required or edited when inputting new bibliographic records, and RLIN profiles do not have to be changed to adjust to new subcollections. However, the length of a STAMP is limited to eight spaces per line including letters, numbers, and punctuation because the paper card set generated from the RLIN record can accommodate only eight characters.[6]

In OCLC, the 049 field is used for subcollection information or textual data called input stamps, which appear on printed cards above or below the call number as designated in the library's card profile.[7] An input stamp above the call number is limited only by the width of the card (forty-eight characters). The width of an input stamp below the call number may not exceed the left margin on the card and must contain at least two characters less than the width of that margin, which is governed by the library's profile. For example, if the library's profile establishes the first indention at 8, the margin size is 6. In addition, the 099 Local Free Text Call Number field can be used for local call numbers that cannot be formatted for printing in the appropriate call number field; subcollection information can also be included here.

LOCAL SYSTEMS

Subcollection designations can be added to the local system as part of the bibliographic record from a utility or keyed directly into the local system. Local systems accommodate this incoming data in various ways regardless of entry method.

For example, in the Geac Library Information System, libraries have the option of using the Agency field for recording the name of the library and the Location field (966 $l) or the Material Type field (966 $m) for subcollection information. Regardless of which option is chosen, the fields are limited in size to five to six characters in the bibliographic record. The short abbreviations in these fields are linked to a longer version of the name through internal tables in the system. Online help screens are also available for displaying the longer version of the name and its corresponding abbreviation.

In NOTIS, another example of a local library system, libraries have the option of establishing Single- or Multi-Processing Centers. Within a processing center there are short location codes comprised of two, four-character combinations that are stored in the 001 field of the copy holdings record. In the online display these short location codes are expanded to a thirty-six-character statement.[8]

NOTIS and Geac are both representative of how local library systems handle and store location and subcollection information. Where options and choices are available, such as those briefly described here for NOTIS and Geac, careful planning is necessary before a decision can be made. It is important to consider decisions in light of current cataloging with its associated location and subcollection information. Equally important is the examination of decisions in light of their impact on moving subcollection designations to an online environment.

ISSUES TO BE ADDRESSED WHEN MOVING SUBCOLLECTION DESIGNATIONS TO AN ONLINE ENVIRONMENT

Libraries have developed names for subcollections that have been used on paper card sets in the past to establish subcollection membership. In most cases, the names have been self-explanatory: periodical, microfilm, compact disc, etc. Because this information is required to determine the exact physical location of an item, the exclusion of subcollection designations—a frequent option in a bibliographic utility or card environment—is no longer a viable option in a fully online environment with local integrated systems. Douglas Ferguson discussing the impact on public service or reference use of the online catalog, suggests that the online catalog could display a "collection record" that describes separate collections and the offline access that is available.[9] This option would however perpetuate a dependence on paper files at a time when online catalogs should be providing users with more access to the collection than traditionally available with a card, book, or COM catalog.

The challenge is to determine how and where the information will be placed in the online utility and local system records for both current cataloging and retrospective cataloging. An important consideration in evaluating a library's existing or planned local system would be to include subcollection definition and functionality as part of the library's system purchase evaluation process. Does the system have the capability of manipulating and displaying three or four tier location and subcollection designations connected to the call number? Is the system capable of distinguishing among or between the different tiers? For instance, can records be searched, sorted, or limited by the library in a subcollection such as MAIN/REFERENCE? This is a particularly important capability since presently not all vendors offer such search options.

It is equally important to consider how the subcollection information will be used in the future. Is the information in an accessible or identifiable field? Can the field be displayed or mapped in such a way that it displays in the online catalog? Can the subcollection designation map to a circulation system? If coded or automatic stamps have been used to generate subcollection designations or notes on catalog cards, are these codes translatable for use in an integrated system? As libraries are faced with moving the manual practice of assigning subcollection designations to an online environment for more than just card production, these questions and a number of other considerations surface, centering on consistency from database to database as well as within a database, standards, and the impact of integrated environments on past practices.

ISSUE 1: TECHNICAL COMPATIBILITY

The mechanics of integrating subcollection information from a bibliographic utility into a local system presents unique concerns whether using the RLIN or OCLC utility. The subcollection information on bibliographic records coming from OCLC or RLIN has to be mapped or translated into the local integrated system. This translation is handled through the local system loader programs and if the subcollection codes or abbreviations have been kept consistent between the utility and the local system, a straightforward mapping can occur.

Entering a very brief code in an online catalog record that is expanded to a more readable abbreviation on a catalog card might make sense in the short run, but in the long run it can increase the amount of processing time each record requires for loading into the local system. It will also be an added site-specific element to be considered and planned for whenever a new release of the software is distributed or the loader program is upgraded.

When subcollection information flows to the local system from one of the utilities, the loader programs must be modified each time a subcollection is added or changed, unless the abbreviations used in both systems are synchronized.

If the online system is capable of accepting the same number of characters used on the manual record, the same designations can be used. However, online systems typically have limited space in fields associated with call numbers. When this is the case, decisions have to be made as to what the designations will be, especially if they must be shortened or drastically abbreviated.

In some instances loader programs need to translate subcollection abbreviations coming from a utility to the corresponding abbreviations used in the local system. At times it might be impossible for the loader programs to translate any subcollection information to the local system when a field or tag in the utility has been used for different types of information. For instance, in the OCLC utility the 099 field can contain multiple subfield $a's with any combination of letters, numerals, punctuation, and special signs or symbols. The subfield $a in the 099 field can contain subcollection information or just the call number. Thus it is difficult to determine when a subcollection designator is present.

ISSUE 2: INTERRELATIONSHIPS BETWEEN SUBSYSTEMS

When examining relationships between subsystems of local systems it is important to plan and consider how subcollection information is used in all the modules of an integrated system—not just the online catalog but also acquisitions, serials control, and circulation. If codes or abbreviations are used in these other components, the linkages should be clear and, if possible, should be kept the same between system modules. Relationships among subsystems should be explored in the early stages of system profiling and evaluation.

ISSUE 3: CONSISTENCY IN A MULTIAGENCY ENVIRONMENT

Local branch subcollection practices, which in the manual environment of the past had little impact on the entire system, now have to be reevaluated in light of the impact they have systemwide. The consistent treatment of subcollection designations encompasses numerous aspects from abbreviation to application.

A first concern relates to the actual use of subcollections. For example, a title housed in the reference collection in one library might also be found in the circulating collection of a branch library. In a multibranch environment such mixed treatment should not present a problem in most online systems, but it does illustrate why subcollection information is needed in the bibliographic record.

From the perspective of a patron or a user in a multibranch system, it is also important to keep subcollection abbreviations consistent in an online union integrated system. Subcollection names for the same type of collections might have varied from library to library in the past, even within the same university system. For example, the use of "FOLIO" as a subcollection at one branch, might have been abbreviated "FO." at another branch. When separate card catalogs were used at each branch this practice might have been acceptable, but in a multibranch union catalog environment different abbreviations for the same type of subcollection only cause confusion. Such confusion can also occur if the book is labeled "FO." and the online catalog now displays "FOLIO".

Many of the multibranch issues involve public services concerns because the technical decisions that are made ultimately result in a screen display for the online catalog user. Public services library staff should be an integral part of any decision making process regarding the designations that will appear in the online catalog.

SUMMARY

Subcollection designations are an integral part of the call number at most libraries and as such require special consideration as libraries move from a manual environment to an online environment. For most libraries this is a gradual transition, starting with cataloging through a utility to implementing a circulation system or online catalog and then possibly an integrated system. Because this transition can extend over many years and decisions regarding subcollections made at an early stage may have a long-range impact, it is important for technical services and public services librarians to consider the options and implications with a great deal of forethought.

Keeping subcollection designations and abbreviations as consistent as possible between manual and online records for cataloging, acquisitions, and circulation should be an important goal of any conversion project. Multiple branch situations present additional problems—especially if cataloging was semiautonomous—when branch designations are brought together in an online catalog. As part of a larger system, branch libraries now served by an integrated system will be relying on a union database to serve their clientele. Cataloging practices and workflows will, therefore, need to change and accommodate subcollection data previously the responsibility of the branch.

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A Study of Indexing Consistency between Library of Congress and British Library Catalogers

Yasar Tonta

Indexing consistency between Library of Congress (LC) and British Library (BL) catalogers using the Library of Congress Subject Headings (LCSH) *is compared. Eighty-two titles published in 1987 in the field of library and information science were identified for comparison, and for each title its LC subject headings, assigned by both LC and BL catalogers, were compared. By applying Hooper's "consistency of a pair" equation, the average indexing consistency value was calculated for the 82 titles. The average indexing consistency value between LC and BL catalogers is 16% for exact matches, and 36% for partial matches.*

For some time it has been observed that indexers tend to assign different index terms to the same document. In other words, "the indexers differ considerably in their judgment as to which terms reflect the contents of the document most adequately."[1] Essentially, indexing consistency is seen as "a measure of the similarity of reaction of different human beings processing the same information."[2]

Indexing consistency in a group of indexers is defined as "the degree of agreement in the representation of the essential information content of the document by certain sets of indexing terms selected individually and independently by each of the indexers in the group."[3]

Studies of indexing consistency reported in the literature have shown that the consistency values vary a great deal between indexers. Hooper, Leonard, and Markey reported the results of some 25 published and unpublished indexing consistency experiments in which the indexing consistency values ranged from 4% to 82%.[4,5,6] However, the indexing consistency scores of various studies, as researchers rightly caution us, should be considered separately and not compared. It appears that consistency values depend on a number of factors under which the indexing was performed. Zunde and Dexter listed 25 factors affecting indexing performance (see also Tarr and Borko[7,8]). For instance, factors such as the use of classification schedules and other indexing aids, the employment of subject specialists as indexers, and indexer training have greatly improved consistency values.[9,10] Markey offers a more detailed discussion, relating some of the factors to findings of previous studies.[11]

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Another variable that affects indexing consistency is the consistency measure used in the evaluation. Studies reported in the literature employed a variety of methods and different formulae to calculate indexing consistency values. In fact, as Cooper puts it, "this circumstance makes generalization about their findings difficult."[12] (For more information about various indexing consistency formulae and statistical techniques involved in consistency studies, see Zunde and Dexter,[13] Hooper,[14] Leonard,[15] Markey,[16] and Rolling;[17] for a somewhat different method, see Chan.[18])

It is assumed that there is a relationship between indexing consistency and "indexing quality." That is to say, "an increase in consistency can be expected to cause an improvement in indexing quality."[19]

For some authors what is more important, and needs to be thoroughly scrutinized, is the relationship between indexing consistency and the effectiveness of information retrieval. Cooper further suggests that "until this relationship [i.e., the relationship between indexing consistency and retrieval performance] has been investigated, there is little point in measuring interindexer consistency at all."[20] Leonard attempted to investigate this relationship in his doctoral dissertation and found that "inter-indexer consistency and retrieval effectiveness exhibit a tendency toward a direct, positive relationship, i.e. high inter-indexer consistency in assignment of terms appears to be associated with a high retrieval effectiveness of the documents indexed."[21] However, he feels that "considerably more research is needed before the relationship between inter-indexer consistency and retrieval effectiveness can satisfactorily be defined."[22]

METHODOLOGY

This study represents an attempt to compare indexing consistency between Library of Congress (LC) and British Library (BL) catalogers.

For some time, BL catalogers ordinarily assigned LC Subject Headings to each document. The Bibliographic Services Division (BSD) of the BL was responsible for adding, among others, LC subject headings to UKMARC records. LC subject headings assigned by BL catalogers were based on the original analysis represented by the PRECIS (Preserved Context Index System) string and the corresponding *Dewey Decimal Classification* (*DDC*) number, not on subject analysis and consequent assignment of LC subject headings directly.[23,24]

In 1987, BL announced its final plans to change its subject cataloging policies starting in 1988. BL's three-stage cataloging plan envisioned, *inter alia*, "developing a specification for the future shape of PRECIS."[25] Since 1989 BL no longer assigns new LC subject headings to its British National Bibliography MARC (BNBMARC) records. Consequently, fewer UKMARC records contain LC subject headings.[26] Moreover, BL will replace PRECIS with a new subject indexing scheme in 1991. As a result of this change, LC subject data will no longer appear after this date in current BNBMARC records created initially by the BL.

As pointed out earlier, LC subject headings assigned by BL catalogers were based on PRECIS strings. Before assigning subject headings, BL catalogers did not check USMARC records to see if LC had already assigned subject headings to the titles in question. In other words, BL was not performing copy cataloging of LC subject headings data available in USMARC records.

Catalogers at LC do not check UKMARC records when performing subject cataloging either. At most they might see the British Cataloging-in-Publication (CIP) data on the verso of a title page during cataloging, but generally they disregard those subject headings. It has been LC's experience that subject headings assigned by the BL catalogers are not very useful.[27]

For the comparison of subject headings assigned by LC and BL catalogers, books published in the United Kingdom in 1987 in the field of Library and Information Science (LIS) (020 in *Dewey Decimal Classification*) were chosen. First, all the titles published in 1987 were identified using the *BNB Subject Catalogue* (Vol. 1)—a total of 237. Using the ISBNs provided, all 237 titles were searched on the OCLC database. Of the 237 titles, records for 217 were found on OCLC. (The rest were either serials, microform copies, or local publications.)

Titles that were cataloged ("indexing" and "cataloging" are used interchangeably in this study) and given the *Library of Congress Subject Headings* (*LSCH*) by both LC and BL catalogers were identified. The 040 field in the MARC format was used to identify the origin of cataloging information. For instance, UKM stands for UKMARC, i.e., cataloged by BL, and DLC stands for LC, i.e., cataloged by LC. Items that were cataloged according to LC practices by libraries other than LC (by the National Library of Medicine, for example) are not included in the sample. By checking the 040 field for each record found on OCLC, it was possible to download all the records that were cataloged by both BL and LC. Eighty-two items were identified. Next, the LC subject headings assigned by BL and LC were compared for consistency.

For each item the headings found in fields 600 (personal name), 610 (corporate name), 611 (conference, congress, meeting, etc. name), 630 (uniform title), 650 (topical *LCSH*), and 651 (geographical *LCSH*) with second indicator value 0 (*LCSH*) were identified.

Finally, the "consistency of a pair of indexers" formula, defined by Rodgers and developed by Hooper, was applied to find out the indexing consistency value for each title cataloged by LC and BL catalogers. It was assumed that each individual cataloger at LC approaches the same document in the same way and assigns the same subject headings, which in fact might not be true. This assumption was also made for BL catalogers. In fact, what is found is *not* the individual inter-indexer consistency value between the two indexers but, rather, the indexing consistency value between LC and BL catalogers as two different groups.

According to Hooper's equation, "the consistency of one indexer with respect to a second is based on the number of times the two indexers agree on the use of a term, divided by the total number of terms used by either indexer (based on the specific document)."[28]

Hooper's "consistency of a pair" formula is as follows:

$$CP(\%) = \frac{A}{A + M + N}$$

where CP is the consistency of term assignment between two indexers (consistency expressed as a percentage); A is the number of term agreements between "M" and "N" for a specific document; M is the number of terms used by "M" but not used by "N"; and N is the number of terms used by "N" but not used by "M."

Having obtained the indexing consistency value for each title, the average indexing consistency value between BL and LC catalogers for the 82 titles was calculated.

FINDINGS

The major findings of the study are as follows:

1. LC catalogers assigned 282 subject headings for 82 items while BL catalogers assigned 127 for the same 82 items. In other words, on the average, LC assigned 3.44 subject headings per title (SD = 1.97) whereas BL catalogers assigned 1.55 subject headings (SD = 0.79). There seems to be a weak association (r = 0.34) between the LC and BL catalogers as two different groups in terms of the number of subject headings assigned for each item. (In fact, the correlation coefficient goes down to 0.20 when an outlier is excluded from the calculation.)

   The marked difference between the average number of subject headings assigned by LC and BL catalogers is understandable. It is obvious that BL relies on PRECIS for subject access rather than *LCSH*, whereas LC completely depends on *LCSH* for subject retrieval.

This weak association between the LC and BL catalogers as two different groups might, on the other hand, reflect differences in the experience and expertise of subject catalogers and the depth of subject indexing. During the subject analysis of a title, catalogers often identify some obvious concepts that later become "legitimate" subject headings. Some catalogers nevertheless overlook some of these concepts and therefore do not assign otherwise useful subject headings for particular titles. More importantly, LC and BL might have had somewhat differing policies regarding the depth of indexing, which would profoundly affect the number of headings assigned by their catalogers. No matter how competent the subject catalogers in each institution are in assigning subject headings, a strong association cannot be expected if, for example, due to economic considerations, one of the institutions limits the maximum number of subject headings per title regardless of the characteristics of the titles. Findings of the present study suggest that LC is more liberal than BL in assigning subject headings: LC assigned, on the average, 3.44 subject headings per title compared to BL's 1.55 subject headings per title.

It appears that BL catalogers tend to keep the number of headings assigned for each title to a minimum. Only for 2 titles (2.4%) did BL catalogers assign more subject headings than LC catalogers. BL and LC catalogers assigned the same number of subject headings for 17 titles (20.7%). It should be stressed, however, that assigning the same number of subject headings for each item does not necessarily mean that they assigned the same subject headings for each item. For the remaining 63 titles (73.9%) LC catalogers assigned more *LCSH* than BL catalogers.

2. Each and every subject heading for the same title that was assigned by LC and BL catalogers was compared. Forty-nine out of 127 BL-assigned subject headings *exactly* matched the LC-assigned subject headings. "Exact matches" included variants in spelling (i.e., catalog–catalogue) and punctuation (i.e., on-line–online), but not synonyms (i.e., non-book–audiovisual).

The following are examples of "exact matches":

a. Title: *Reference services today: from interview to burnout*
   LC: Reference services (Libraries)
   BL: Reference services (Libraries)
   (Both subject headings exactly match. Note that the example above is also a "perfect match," i.e., the indexing consistency is 100%.)

b. Title: *A guide to collecting librariana*
   LC: Library science—Collectibles
   Libraries—Collectibles
   Bibliography—Collectibles
   Book collecting
   BL: Libraries—Collect*a*bles
   (The second LC-assigned subject heading and BL's only heading match exactly except for spelling.)

The example below is *not* considered an "exact match." Although the second LC-assigned subject heading and the BL-assigned one are conceptually the same, synonyms were used (i.e., audiovisual—non-book); such subject headings were treated as "partial matches" in this study.

c. Title: *Legal deposit of non-book materials*
   LC: Libraries—Special collections—Non-book materials
   Acquisition of *non-book* materials
   Acquisition of non-book materials—Great Britain
   Legal deposit (of books, etc.)
   Legal deposit (of books, etc.)—Great Britain
   BL: Acquisition of *audio-visual* materials

By applying Hooper's equation for exact matches, the average indexing consistency value between BL and LC catalogers was found to be 16%. (Further examples of subject headings assigned by LC and BL catalogers for identical titles are given in appendix A.)

3. In the second run *partial* matches were added. Forty-four BL-assigned headings partially matched further. A synonym in a multiple-word-subject-heading was treated as a "match" as long as it was not the first word in that subject heading. The lack of a subdivision in a subject heading was also accepted as a partial match if the main part of the subject heading matched exactly. The following are examples of "partial matches":

a. Title: *Access to local authority official publications: proceedings of a seminar*
   LC: Local government documents—Great Britain—Congresses
   Local government documents—Information services—Great Britain—Congresses
   BL: Local government documents—Great Britain—Bibliography—Methodology

b. Title: *Reference and information services: a reader for today.*
   LC: Reference services (Libraries)
   Information services
   BL: Reference services (Libraries)—United States
   Information services—United States

Note that although all subject headings above have the same main headings, subdivision(s) differ. Such headings were treated as "partial matches." It should also be noted that in large online catalogs the lack of a subdivision in a subject search will yield many irrelevant hits as well as relevant ones, thereby increasing the information "overload." Consider, for instance, the subject headings **Library science** vs. **Library science—Automation.**

The example below is *not* a "partial match" even though the first words in the first LC-assigned subject heading and the second BL-assigned one are the same.

c. Title: *Design and production of media presentations for libraries*
   LC: Audio-visual *library service*
   Library science—Audio-visual aids
   Communication—Audio-visual aids
   Media programs (Education)
   BL: Library orientation—Aids and devices
   Audio-visual *materials*

For both exact and partial matches, the average indexing consistency value between BL and LC catalogers was found to be 36%. (Several examples of consistency values are given in appendix A.)

Seventeen BL-assigned subject headings for 12 titles were completely different from those assigned by LC.

4. Assuming that the indexing consistency value between BL and LC catalogers would have been different if the number of subject headings assigned by BL catalogers were equal to that of LC catalogers, the indexing consistency value was calculated for 17 titles that have the same number of *LCSH* assigned by both LC and BL indexers. The following indexing consistency values were obtained:

   For example matches, the average consistency value was found to be 14%.

   For both exact and partial matches, the average consistency value was found to be 41%.

   Although there is a slight difference between the two averages, (i.e., 16% vs. 14% for exact matches, and 36% vs. 41% for partial and exact matches), there seems to be no strong relationship between the indexing consistency value and the assumption that if an equal number of subject headings were assigned by both LC and BL for all titles, the consistency value would have been different.

CONCLUSIONS

Findings obtained in this study suggest that the indexing consistency value between LC and BL catalogers for books in the field of Library and Information Science is rather low: 16% for exact matches and 36% for both exact and partial matches. In fact, these low indexing consistency values verify the findings of previous studies.

Low indexing consistency values between LC and BL catalogers might have some implications for copy cataloging. Copy cataloging of UKMARC records bearing *LCSH* could produce some surprising results for LC catalogers. Such surprises should also be expected by BL catalogers. It appears that LC and BL catalogers use somewhat varying terminologies, at least in Library and Information Science; they often disagree on which indexing terms to assign for a particular title. Using somewhat different (or, at least not the same) index terms may well be due to the fact that both LC and BL catalog materials according to the requirements of their clients and/or users. It could be that certain terms are not commonly used on both sides of the Atlantic. Nevertheless, indexing consistency rates should be taken into account when performing copy cataloging.

The fact that BL assigns fewer subject headings than LC has some important consequences regarding subject access in library catalogs. Assigning more subject headings per title increases the number of subject access points for a given title. It is reasonable to suggest that titles posted under various subject headings will be more accessible, though not necessarily more useful, than those posted under fewer subject headings.

Although it is difficult, or, indeed, inconceivable, to extend the findings obtained in this study to other fields, the following can be said of indexing consistency in general terms:

Indexing consistency is certainly an important issue and should be studied further. Similar studies comparing more titles in other fields as well as in Library and Information Science could be conducted.

It seems that much remains to be done to improve indexing consistency between professional indexers, even though controlled vocabularies such as *LCSH* are helpful. No matter how competent and experienced the indexers are, there is no guarantee that using the same tools, at least in phrasing subject headings, will ensure consistency among different indexers in assigning topical subject headings.

It is widely believed that catalog users have some understanding of current subject headings, at least in their respective fields, so that, by using the subject approach, they can retrieve what they want. The findings of indexing consistency studies, however, do not support this commonly held view. From the users' point of view, the more consistent the indexing terms are, the less frustrated the users get when searching catalogs. After all, one would not expect users to guess the "right" subject headings correctly all the time if indexing consistency were low.

One should also consider the consistency (or, rather, variety) in users' vocabulary/terminology when naming the same concepts. This has a profound effect on the overall success in searching library catalogs. In fact, researchers have found that considerable numbers of subject searches in online catalogs resulted in no retrievals due to, among other factors, lack of knowledge concerning *LCSH* terminology and misspellings.[29] Percentages of zero retrievals in subject searching range from a low of 35% to a high of 57.5%.[30]

Perhaps more important than the inter-indexer consistency is the consistency between the terminology of indexers and that of catalog users. At present, most of the controlled vocabularies provide limited numbers of cross-references in order to refer the user to the preferred indexing terms. The development of online catalogs with subject searching facilities will enable us to study the consistency issue further. For example, the availability of *LCSH* online in online catalogs makes it possible to compare the users' vocabulary with *LCSH* terminology and to see how much discrepancy exists between the two. If the users keep entering the same index terms for a particular subject and those index terms are not available in the system as "legitimate" subject headings, the terms could be changed or new cross-references could be added. Such experiments would certainly add a new dimension to indexing consistency studies and improve the success rate in subject searching in online catalogs.

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APPENDIX A: EXAMPLES OF INDEXING CONSISTENCY VALUES BETWEEN LIBRARY OF CONGRESS AND BRITISH LIBRARY CATALOGERS

1. Vickery, B. C. and Vickery, A. *Information science in theory and practice*
   LC: Information science
   BL: Information Science
   Consistency value: 100%
2. Veit, Fritz. *Presidential libraries and collections*
   LC: Presidents—United States—Archives
   BL: Presidents—United States—Archives
   Consistency value: 100%
3. ur Rahman, Sajjad. *Management theory and library education*
   LC: Library education
   Library administration—Study and teaching
   Library administrators—Training of
   BL: Library administration—Study and teaching
   Library education
   Consistency value: 67%
4. *Personnel issues in reference services*
   LC: Reference librarians
   Library personnel management
   Reference services (Libraries)
   Library administration
   Library services—Organization & administration
   BL: Library personnel management
   Reference services (Libraries)
   Reference Librarians
   Consistency value: 60%
5. Crawford, Walt. *Technical standards: an introduction for librarians*
   LC: Library science—Technological innovations—Standards
   Library science—Standards
   Technology—Standards
   Information science—Standards
   BL: Library science—Standards
   Information science—Standards
   Consistency value: 50%
6. Strickland-Hodge, Barry. *How to use Index Medicus and Excerpta Medica*
   LC: Medicine—Abstracting and indexing
   Index medicus
   Excerpta medica
   Medicine—Bibliography—Methodology
   MEDLARS-MEDLINE information system—United States
   Abstracting and Indexing
   BL: Index Medicus
   Excerpta Medica
   Medicine—Abstracting and indexing
   Consistency value: 50%
7. Burton, Paul F. *The librarian's guide to microcomputers for information management*
   LC: Libraries—Automation
   Library science—Data processing
   Microcomputers—Library applications
   BL: Microcomputers—Library applications
   Consistency value: 33%
8. Harrod, Leonard Montague. *Harrod's librarians' glossary of terms used in li-*

brarianship, documentation, and the book crafts and reference book
LC: Library science—Dictionaries
Information science—Dictionaries
Bibliography—Dictionaries
Book industries and trade—Dictionaries
BL: Library science—Dictionaries
Consistency value: 25%

9. *Conservation of library and archive materials and the graphic arts*
LC: Library materials—Conservation and restoration
Archival materials—Conservation and restoration
Graphic arts—Conservation and Restoration
Books—Conservation and Restoration
Art—Conservation and Restoration
Paper—Preservation
BL: Library materials—Conservation and restoration
Consistency value: 17%

10. Tracy, Joan I. *Library automation for library technicians*
LC: Libraries—Automation
Library science—Data processing
Library technicians
BL: Processing (Libraries)—United States
Consistency value: 0%

11. Hartley, J., Noonan, A., and Metcalfe, S. *New electronic information services*
LC: Database industry—Great Britain
Database industry
BL: Information storage and retrieval systems
On-line data processing
Consistency value: 0%

12. *The Application of Microcomputers in Information, Documentation, and Libraries: Proceedings of the Second International Conference on the Application of Micro-Computers in Information, Documentation and Libraries*
LC: Libraries—Automation—Congresses
BL: Microcomputers—Library applications
Consistency value: 0%

Preservation Microfiche: A Matter of Standards

Myron B. Chace

Standards for converting library materials to a microfiche format are described, and the question of whether microfiche standards take preservation concerns into account is raised.

Discussions about reformatting embrittled library materials for preservation purposes can quickly lead to questions about what practices or procedures should be followed to accomplish this end. Concerns also are raised about whether, once the conversion is made, the resulting product will survive longer than the deteriorating item it is intended to replace. A general response to such questions is to call attention to published standards, recommended practices, or technical reports that outline steps for preserving archives and library materials in microform.

Within standards literature, roll microfilm has been emphasized as the primary preservation film format.[1] While many librarians and archivists acknowledge the value and uses of roll film, they also see many advantages in microfiche, and suggest that microfiche has been underutilized in library preservation.[2] Are there standards that describe converting library materials to a microfiche format? Of greater importance, do microfiche standards take into account preservation concerns?

There are, at present, many standards for microfiche. For example, fifteen American National Standards Institute (ANSI) standards, at least in part, apply to microfiche (see appendix A). As many as twenty-four international standards also relate to microfiche.[3] Microfiche standards have been published by the Association for Information and Image Management (AIIM), the National Information Standards Organization (NISO), the Committee on Scientific and Technical Information (COSATI), and the British Standards Institute.[4]

Curiously, while standards and recommended practices applied to roll microfilm are cited under the umbrella of *preservation microfilming*, application of the same or similar procedures to microfiche has not generated the term *preservation microfiche*. One may speculate that published standards apparently do not detail procedures for converting a wide range of archives and library materials to microfiche as comprehensively as do procedures for microfilm reformatting. Also, it is possible that microfiche presents preservation is-

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sues that have not been addressed in standards literature. An examination of standards as they apply to microfiche as a preservation format has revealed several issues.[5]

- *Definition of "preservation microfiche."* Nowhere is the term "preservation microfiche" defined. Familiarity with microfiche as a distribution or reader microform has perhaps limited the consideration of microfiche as a preservation master microform. Invoking the term *preservation* in conjunction with microforms, however, suggests specific materials, processes, inspections, housing, and storage. A primary preservation objective is the quality and stability of an original microimage.
- *Form of the master negative.* How will a master microfiche negative be created? Standards indicate two basic methods for creating a microfiche: (1) the step-and-repeat system in which a camera exposes an established pattern of images onto 105mm film; (2) the strip-up method whereby strips of 16mm or 35mm film are cut from rolls and inserted into transparent jackets. For preservation microform programs, recommendations for both practices are probably required. Of ultimate concern, however, must be the handling and care afforded the master negative. All precautions presently taken for preservation microfilm masters must apply to masters generated in a microfiche program, regardless of format.
- *Reformatting for microfiche.* Current microfiche standards do not offer reduction ratios and schemes for document arrangements that encompass a wide range of library materials. Planning the arrangement of individual sheets of paper or pages prior to microfiche production is costly, time-consuming, and demands answers to questions not generally associated with microfilm.[6] An initial decision must balance the dimensions of original materials against specific reduction ratios. Microfiche standards currently take into account a rather limited number of document sizes. Selecting a low reduction ratio for an individual title, for example, may result in a number of continuation microfiche. This negates the advantages of a unitized microform, a recognized attribute of microfiche. On the other hand, using a high reduction ratio in order to generate as many images as possible on a microfiche may make it difficult to achieve the quality index levels that presently are sought in preservation microfilming programs.[7]

  In addition, the layout of a microfiche must take into account large graphic items. Just how would the many categories of large-sized, graphic materials be converted to microfiche? Should an entire illustration, chart, or map be captured as one full-microfiche-sized microimage, or should the item be broken down into sections and appear as sequential images, as is now done with roll microfilm? Should the resulting sequential pattern represent the appearance of the original, nonsegmented image, or can it consist of merely a row of pieces of a larger picture? It is worth noting that with the 1988 publication of ANSI/AIIM MS37, *Microphotography of Cartographic Materials*,[8] alternatives for reformatting large items are being examined.
- *Retakes, corrections, and additions.* How would corrections to a master negative be accomplished in a microfiche program? Current microfilming practices allow for splicing refilmed items or additional material into or at the end of the master negative roll. In a jacketing system, it may appear deceptively simple to suggest filming replacement strips for jacket sleeves. But if more replacement strips are created than originally jacketed, the entire layout must be changed, perhaps to include continuation microfiche, if there is a

lengthy title. Use of a step-and-repeat system probably negates all correction attempts short of reshooting the entire microfiche. If such work is required, it defeats one of the purposes in creating a preservation master—i.e., the existence of a master negative generally implies that all work accomplished to create it will not have to be repeated.

- *Bibliographic guides and targets.* Will the same quantity of targets usually included on roll film also appear on fiche? The entire range of bibliographic and eye-legible targets, now a familiar part of roll film, may not easily transfer to microfiche. Will it be necessary to include appropriate test targets—for example resolution charts—on each microfiche? Should the eye-legible identification target be replaced by the microfiche header strip? Is it necessary to pepper a microfiche with multiple eye-legible targets to describe original material discrepancies? Will lengthy titles resulting in continuation fiche require special indexing targets?

The problem areas outlined above are by no means comprehensive. But even these limited examples will require considerable investigation and discussion. It is somewhat fortunate that existing and recommended practices address many of these topics to some degree. The task will be to expand consideration to other microformats.

Recent work to note standards aspects of microfiche as a preservation format was initiated in committees of ALA's Resources and Technical Services Division (now the Association for Library Collections & Technical Services).[9] Considerable interest was evinced at ALA's Annual Conference in July, 1988, when a "Forum on Preservation Microfiche" was convened. That meeting resulted in the formation of a subcommittee of the Reproduction of Library Materials Section Standards Committee to review standards that relate to production of microfiche.

In January, 1989, following the microfiche subcommittee meeting at ALA's Midwinter Meeting, representatives from the RLMS Standards Committee attended the Association for Information and Image Management's Standards Board meeting to discuss appropriate standards that may be modified to provide for generation of "preservation microfiche."[10] In the following weeks, the RLMS Standards Committee was notified that the AIIM C10 Committee on Microfilm Quality was interested in establishing a working relationship to examine microfilming-related issues.[11] AIIM's response, in part, was prompted by information provided by the microfiche subcommittee's review of MS5 and MS23. The review cited areas that could be troublesome in the event that preservation microfilming practices are applied to a microfiche format.[12]

What will be the outcome of these standards activities? Many preservation specialists expect a standard or technical report similar to ANSI/AIIM MS23—*Practice for Operational Procedures/Inspection and Quality Control of First Generation, Silver-Gelatin Microfilm of Documents*. That standard is unusually comprehensive and is recognized as one of the essential documents undergirding preservation microfilming programs. Although perhaps hoped for, a similar document for "preservation microfiche" might not be forthcoming. Rather, various inquiries into microfiche applications might take the form of individual technical reports or appendices to existing standards.[13]

Whether or not there will be an all-inclusive document or a series of application-specific reports that will describe the conversion of various library materials to "preservation microfiche," those guidelines will be created within an existing standards process. In the end, that process will not only reflect the interests of archives and libraries, but will also take into account the needs of businesses, corporations, and other organizations.[14]

References and Notes

1. Association for Information and Image Management, *Preservation Standards Set* (Silver Springs, Md.: Assn. for Information and Image Management, 1988).
2. Richard Frieder, "The Microfiche Revolution in Libraries," *Microform Review* 16:215 (1987).
3. Secretariat International Organization for Standardization/Technical Committee, *International Standards Related to Micrographics* (Paris: Assn. Francaise de Normalisation, Oct. 1988).
4. Allen B. Veaner, *The Evaluation of Micropublications: A Handbook for Librarians* (Chicago: Library Technology Program, American Library Assn., 1971), p.52–53.
5. Letters to Vanessa Piala, Chair, Subcommittee on Preservation Microfiche, Reproduction of Library Materials Section Standards Committee, American Library Assn., from Erich Kesse, Preservation Officer, Univ. of Florida Library, March 29, 1989, and Will Meredith and Charles Willard, Harvard Univ. Libraries, May 19, 1989.
6. William Saffady, *Micrographics* (Littleton, Colo.: Libraries Unlimited, 1978), p.47.
7. See Michael J. Gunn, *Manual of Document Microphotography* (London: Focal Press, 1985), p.109–10.
8. Association for Information and Image Management, *Microphotography of Cartographic Materials, ANSI/AIIM MS37-1988* (Silver Spring, Md.: Assn. for Information and Image Management, 1988).
9. Minutes from RTSD's Preservation Microfilming Committee and RLMS Standards Committee, American Library Association Midwinter Meeting, January, 1988.
10. Vanessa Piala and the author attended the Association for Information and Image Management's Standards Board meeting, Silver Spring, Maryland, January 10, 1989.
11. Letters to the author from William E. Neale, Chairman, AIIM C10, April 27 and June 12, 1989.
12. Letter from the author to Thomas C. Bagg, National Institute of Standards and Technology, and member, AIIM, C10, May 30, 1989.
13. Organizations may also develop their own comprehensive guidelines in the absence of standards. A notable example of the use of microfiche as a preservation format is the preservation program of the American Theological Library Association, Evanston, Ill. (See Robert Markham, "Religion Converted to Microformat," *Microform Review* 16:217–23 (1987).
14. Nancy E. Gwinn, ed., *Preservation Microfilming: A Guide for Librarians and Archivists* (Chicago: American Library Assn., 1987), p.114–17.

Appendix A: ANSI Standards Related to Production of Microfiche*

IT9.1-1989	Standard for Imaging Media (Film)—Silver-Gelatin Type—Specifications for Stability.
IT9.2-1989	Standard for Photography (Processing)—Processed Films, Plates, and Papers—Filing Enclosures and Containers for Storage.
MS1-1988	Practice for Operational Practices/Inspection and Quality Control for Alphanumeric Computer-Output Microforms.
MS5-1985	Micrographics—Microfiche.
MS8-1988	Document Marl (Blip) Used in Image Mark Retrieval Systems.
MS11-1987	Microfilm Jackets.
MS14-1988	Specifications for 16 and 35mm Microfilms in Roll Form.
MS18-1987	Splices for Imaged Film—Dimensions and Operational Constraints.
MS23-1983	Practice for Operational Procedures/Inspection and Quality Control of First-Generation, Silver-Gelatin Microfilm of Documents.
MS26-1990	Micrographics—35mm Planetary Cameras (Top Light), Test Target and Procedures for Determining Illumination Uniformity.
MS39-1987	Recommended Practice for Operational Procedures, Quality Control and Inspection of

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*Supplied by Erich J. Kesse, Preservation Officer, University of Florida Library, January, 1989.

	Graphic Computer-Output Microforms.
PH1.43-1983	Standard for Photography (Film)—Storage of Processed Safety Film.
PH2.16-1984	Standard for Photography (Sensitometry)—Density Measurement, Terms, Symbols, and Notations.
PH2.18-1984	Standard for Photography (Sensitometry)—Density Measurements—Spectral Conditions.
PH4.8-1985	Photography (Chemicals)—Residual Thiosulphate and Other Chemicals in Films, Plates, and Papers—Determination and Measurement.

ALCTS Publications

New Publication:

Preservation Education Directory. Compiled by Christopher D.G. Coleman, University of California-Los Angeles, for the PLMS Education Committee. 32p., June 1990. ISBN 0-8389-7422-8 $5.00

Related Works from the Association for Library Collections & Technical Services:

Preservation Microfilming: Planning & Production. Edited by Gay Walker. 72p., September 1989. ISBN 0-8389-7324-8 $12.00
Papers from the RTSD Preservation Microfilming Institute, New Haven, Connecticut, April 21-23, 1988. Chapters by Wesley Boomgaarden, Myron Chace, Margaret Byrnes, Patricia McClung, Carolyn Harris, and Gay Walker.

A Core Collection in Preservation. Compiled by Lisa L. Fox, SOLINET, for the PLMS Education Committee. 24p., June 1988. ISBN 0-8389-7224-1 $5.00

Order from ALA Publications, 50 East Huron Street, Chicago, IL 60611

User Acceptance of Library Catalog Results: An Exploratory Study

Tschera Harkness Connell

This study explores whether a student user is more likely to believe the results obtained from an online system than from a manual system. Findings indicate that, overall, they are equally likely to believe either system. However, students' familiarity with the title searched made a difference. Students who had heard of a book but found no record for it were more likely to distrust the computer. When the book was unfamiliar and no record was found, they were more likely to distrust the card catalog.

The purpose of this study is to examine user beliefs about the accuracy of information found in manual and computer catalogs in libraries. Specifically, this study is an examination of whether a user is more likely to believe an answer received from a computer system than one received from a manual system.

User acceptance is one very important factor in the successful implementation of computer systems and services. As computers become more common in libraries, it is important to examine users' attitudes and beliefs about the new systems.

It is a fairly common observation of librarians that users uncritically accept answers received from library computer systems. Whether or not users accept the results of computer catalogs more readily than they accept the results of paper catalogs has never been determined. When users consult paper catalogs they can see the complexity of the catalog, even if it is not understood. This complexity is especially apparent in card catalogs where the quantity of information on a record may be extensive. Users who observe erasures might recognize the potential for errors, and ask questions about information they do not understand. In online catalogs, however, the human input is invisible. This "lack of transparency of the system interacts with users' tendencies to believe blindly in the results that it gives."[1] The user assumes that the information presented is correct, or worse, complete. For the purposes of this study, this unquestioning acceptance of the catalog's completeness will be defined as belief in the catalog.

Hypothesis 1

Users are more likely to believe the results obtained from a computer catalog than they are the results obtained from a manual catalog.

Whether or not users are willing to accept the information in the catalog (au-

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tomated or manual) might depend upon their familiarity with the material sought. For example, if a patron seeks material used previously it would not be surprising if upon not finding that particular item, the patron asks for help. Similarly, if an item is well known or currently popular, a patron might express doubt about not finding the title in the catalog.

Hypothesis 2

Users are more likely to disbelieve answers from a catalog that indicates that the library does not own an item if that item is known by or familiar to the user. Likewise, users are more likely to accept answers that indicate that the library does not own an item, if the item is unfamiliar to them.

Hypothesis 3

Users are more likely to believe the results from a computer catalog than the results from a manual catalog and the strength of this belief is influenced by whether or not the material sought is familiar to the user.

Very little literature addresses the specific issue of whether or not people believe the results obtained from computers. However, writers and scholars from many fields have debated the effects of computers on society in general. Recent literature has concentrated on the effect of the new technologies on individuals. Studies that have examined the effects of computers in libraries have focused on employee reactions to new technologies or on patterns of patron use of online catalogs.[2,3]

Only two studies were found that examined patron attitudes toward computers and automated library catalogs. In a study on the "Effects of Age, Gender, College Status, and Computer Experience on Attitudes toward Library Computer Systems (LCS)," Koohang identified three types of attitudes toward computers: computer anxiety (fear of computers or computer learning), computer confidence (computer efficacy), and computer liking (defined as enjoyment of computers and their use).[4] Computer experience is the only factor that significantly affected student attitudes, specifically computer anxiety and computer liking.

Noble and O'Connor looked at the relationship of user attitudes toward computer technology and acceptance of a specific online library catalog.[5] They found that although users exhibit contrasting attitudes toward computer technology in general, the acceptance of a specific technology—in this case the catalog (96.7% acceptance)—could be high.

The following survey statement used in the Noble and O'Connor study is particularly relevant to this investigation: "In the library computer, records are more reliable than card/microfiche records."[6] Both groups of students, those who trusted the computer and those who did not, tended to agree, although the results were not significant.

METHODOLOGY

The principal methodological question for this study is how to measure belief. Different kinds of searches require different approaches to the catalog. In a broad survey-interview process, the researcher would have to have a very large sample to make sure that belief in catalog results, and not user knowledge of searching techniques, was being tested.

The fact that many searches are not comprehensive must also be considered. A user might be searching for a few good items, or for a particular item. In the first instance, belief as defined by this study makes little sense. Presumably, anything found that is related to the search query is acceptable. In the second case, belief refers to accuracy and completeness.

In a 1980 study on the identification and characterization of computational estimation processes, Reys identified individuals with good mathematical estimation skills.[7] These individuals were asked to estimate the answers to math problems, then check their answers by using a calculator. The calculators were programmed to give systematic errors in computing, first by a factor of 10%, then 25%, then 50%—all above the actual answer. It was found that even good estimators were reluctant to question unreasonable results.

The catalog, like the calculator, can be alerted to give incorrect results to selected questions as a way of testing belief. Reys' methodology serves as a model for the present study. Because of the difficulties of obtaining a sample large enough to study multiple kinds of catalog use, only author and title searches for particular items are used.

The study requires a site where the collection coverage by the automated and the manual system is identical. This is necessary so that the researcher can be assured that belief rather than knowledge of the scope of a library's catalogs was tested for.

Two groups of college students were compared in their use of library catalogs. One group was assigned to use a card catalog, the other group an online circulation system. A combination student exercise and survey was used to gather data. The exercise required the students to search the assigned catalog for records of 3 items. The students then answered questions based on the information found. They also completed a survey about their use of libraries and computers.

SETTING

Students participating in this study were from the Library Research Methods classes at Millikin University in Decatur, Illinois. Since the late 1970s, Millikin has required students to take a one semester hour library research methods course. Most students take this course during their freshman year. The course emphasizes developing and implementing search strategies for finding information in the library. Practical skills include instruction in the use of the card catalog, the online circulation system (Library Computer System, or LCS), and, recently, the online catalog.

Millikin has been a member of the LCS network since 1979 and has its entire holdings in LCS. With the statewide adoption of Illinet Online (IO), Millikin also has its holdings in full bibliographic record (FBR) format. Millikin maintains a card catalog.

Six sections of the Library Research Methods were offered during the 1989 spring semester. Three sections totaling 95 students (all the sections of one instructor) comprised the sample of students used in this study.

DESIGN OF EXPERIMENT

Questionnaires were distributed to 95 students in 3 sections of Library Research Methods. Six students pretested the questionnaire and 89 were given the questionnaire as an out-of-class assignment. All students were assigned to use either the card catalog or LCS. LCS was chosen rather than the newly installed Illinet Online because it is simpler to use and the students had had more practice using it. It has been shown that many students do not understand the distinction between an online circulation tool and a catalog, and will use the limited system as if were a catalog.[8] For the kind of search performed for this study, a finding list is all that is required.

This experiment used 9 titles representing 3 levels of familiarity: known, familiar, and unknown. Known items are currently popular items or items that have been presented to students in class. Familiar items are items the researcher assumed students would know either because the titles are well known (but not current) or the title has a familiar ring. Unknown items are titles that are highly specialized and not likely to be titles that undergraduate students, especially freshmen, would have encountered.

Three of the 9 titles could be found in the Millikin catalogs. Each student received a questionnaire consisting of three titles—1 from the group in the Millikin catalogs and 2 that were not in the catalogs. This process assured each student the possibility of one search success. The specific grouping of the 3 titles with each questionnaire was determined randomly. After all the questionnaires were collated, they were interleaved so that every other questionnaire directed the student to use the card catalog. This interleaving assured random assignment of the 2 catalogs. Each student used only one catalog for all 3 searches.

For each of the 3 titles assigned, the students were asked to indicate first, whether they had heard of the book and second, to predict whether or not Millikin owned the book. The students then searched for the title in the assigned catalog and answered questions about their findings. The students were instructed to use only the tool assigned. They were specifically asked *not* to go to the library shelves and not to discuss the questions with library staff or other students.

The nine titles used for the experiment are:

Known:	Kane, Joseph Nathan. *Famous First Facts*
	Statistical Abstract of the United States
	King, Steven. *Dead Zone*
Familiar:	Nixon, Richard Milhouse. *The White House Experience*
	Mitchell, Margaret. *Gone with the Wind*
	Crichton, Michael: *The Great Train Robbery*
Unknown:	Mtesigwa, Angelo M. *The Politics of Agriculture in Ukerewe*
	Rogers, Everett M. *Diffusion of Innovation*
	Seeta, Prabhu K. *Pesticides Use in India Agriculture*

In the known group, the first two titles had been presented to the students and emphasized in class. The third is a well-known, popular title by Steven King. For the experiment, the record for *Famous First Facts* had been removed from both catalogs. This item provided a test for whether students were more likely to distrust the negative results of their search for a known item than for an unknown item. The King work is not owned by Millikin.

In the familiar group, *The White House Experience* is a fictitious but plausible title. This title was used to test whether the question, "Have you heard of this book?" actually gave an indication of whether or not a book was known to the student. The Crichton work is not owned by Millikin.

The third group, representing unknown items, contained two books on the subject of agriculture outside the United States. These two books are not owned by Millikin. The third book, which is owned by Millikin, is quite specialized and not likely to have been encountered by freshmen.

Data Analysis and Results

Response Rate. Inclusion of Pretest Results

Sixty-three usable questionnaires were returned (66% rate of return), including the 6 that were returned during the pretest. The pretest process included individual interviews with each student to determine the clarity of the questionnaire, and the potential validity of the familiarity groupings of the books. The interview took place after the student had completed the questionnaire. One title used in the pretest (Agatha Christie, *Appointment with Death*) that had been assumed to be known, was not familiar to the pretest group. This title was replaced with the Steven King work in the actual experiment.

The analysis was performed first excluding, and then including the pretest student responses. There are no significant differences in results between the two methods so the analysis presented here will include the pretest. The 2 pretest cases of the Christie book were not included in the analysis. Therefore, the 63 usable questionnaires returned yielded 3 × 63 − 2 = 187 cases.

Student Search Skills

Before testing the 3 main hypotheses, a number of assumptions need to be noted. The students in the research methods classes had already had lessons and practical assignments on how to use the catalogs. Hence, it is assumed that students' search skills are good. The tabulated responses to the statement, "I found a record for this book in the catalog" (or on LCS) for each of the titles used in the experiment are shown in table 1.

The overall accuracy rate of 93% (174/187) indicates that the students' search skills are good. Errors that did occur are of two types: (1) finding a record when no record exists, and (2) failure to find a record that does exist. Only 2 errors were of the first type. As expected, most errors were of the second type. Of the 10 errors of the second type, *Statistical Abstract* seemed to present the most problems. Only 73% of the students searching for that title found it. In fact, 6 of 10 errors of the second type are searches for this title. It is worth noting that the 10 failures of the second type were evenly distributed between the 2 catalogs.

TYPE OF DISBELIEF IN THE CATALOG

In this experiment, student disbelief in the catalog could be 1 of 2 types. First, the student might believe that Millikin does not own the book even though a record for the book is found in the catalog. Second, the student might believe that Millikin owns the book even though the catalog has no record for the book.

Table 2 shows that almost all disbelief was of the second type. The table compares students' answers to whether or not they found a record for the book in the catalog with their answers to whether or not Millikin owns the book.

In 56 cases, students found a record in the catalog. In only 1 (2%) of these cases did the student disbelieve the catalog. Disbelief of the first type is rare.

In 130 cases, students found no record for the book in the catalog. In 9 (7%) of these cases, students said that they believed that Millikin owned the book anyway. Thus, most disbelief is of the second type.

In 4 of the 130 cases when students found no record, the student did not answer whether or not Millikin owned the book. Upon examining the responses for these 4 cases more closely, 2 appear to be instances of oversight. The answers to the follow-up scalar question indicate that the students were very sure Millikin did not own the book. The other 2 cases may reflect uncertainty on how to answer the yes-no question. In one case, a response for *Dead Zone*, the student indicated on the scalar question that he was very sure that Millikin owned the book. The other, a response for *Famous First Facts*, gave the call number for the book, crossed it out and wrote "I was sure Millikin owned this book." Despite instructions, the student obviously went to the shelves.

BELIEF IN THE CATALOG

Hypothesis 1
Users are more likely to believe the results obtained from a computer catalog than they are the results obtained from a manual catalog.

Null hypothesis 1
There is no difference between students' mean belief (M_l) in the results obtained from LCS and the mean belief (M_c) in the results obtained from the card catalog: $M_c = M_l$.

This analysis is based on the 130 searches indicating that the book record was not found. As discussed above, most disbelief in the catalog occurs when the student does not find the record.

Using the student response to the question "Does Millikin own this book?" the X^2 statistic was calculated to determine the amount of discrepancy between the responses for the two catalogs (see table 3).

Using the catalog type as the independent variable and belief as expressed in the dichotomous variable "Does Millikin own this book?" as the dependent variable, there is not enough discrepancy between the two catalogs to reject the null hypothesis ($X^2 = 4.20$; significance level $= .12$). Students are not significantly more likely to believe the results obtained from a computer catalog than they are the results obtained from a manual catalog. In fact, seven students disbelieved the computer catalog while only two disbelieved the card catalog.

Testing the hypothesis using the scalar question addressing certainty of belief also shows that there is not enough evidence to reject the null hypothesis. Mean belief is measured on a scale from

1 to 10. A students responds "1" to indicate certainty that Millikin *does not* own the book and "10" to indicate certainty that Millikin *does* own the book. As above, search successes have been eliminated. The sample mean belief for the card catalog was 2.88, and for LCS, 3.00. A t-test to determine the difference between the means produces a value of $t = -.24$, which corresponds to a .81 level of significance. The type of catalog does not significantly influence the degree of student belief in search results.

FAMILIARTY AND BELIEF

The first step of the analysis is to determine whether the researcher-defined categories of "known," "familiar," and "unknown" match the students' familiarity with the items. The researcher intended that all students would have heard of the three "known" books, and that many students would have heard of the three "familiar" books. Table 4 shows that the expectations for "known" books failed. The unknown category does represent books unknown to the students. However, the known and familiar categories failed to support expectations. *Statistical Abstract*, although presented to the students in class, is predominantly unknown. Sixty-eight percent of the students searching for that title said that they had never heard of it.

The hypothesis below deals with the effect of familiarity on students' beliefs in the catalog search results. Because of the low student recognition of the "known" *Statistical Abstract*, the hypothesis tests will exclude *Statistical Abstract*. The hypothesis tests had already been restricted to the 130 cases of books not found in the catalog, six of which were *Statistical Abstract*. Exclusion of these 6 now reduces the number of cases to 124.

The remaining 124 cases were used to test researcher defined familiarity groupings. The results of this analysis are much more in line with familiarity predictions (see table 5).

Hypothesis 2

Students are more likely to disbelieve answers from a catalog that indicates that the library does not own an item if that item is known or familiar to the user. Conversely, students are more likely to accept answers that indicate that the library does not own an item if the item is unfamiliar to them.

Null hypothesis 2

Whether a book is known, familiar, or unknown makes no difference as to whether a student believes Millikin owns the book: $M_k = M_f = M_u$ (where M_k = mean belief for "known" items; M_f = mean belief for "familiar" items; M_u = mean belief for "unknown" items, all measured on the scale from 1 to 10).

The null hypothesis was tested by comparing the students' responses to the scalar question "How certain are you that the Millikin library owns this book?" to the known, familiar, and unfamiliar categories. Using one-way analysis of variance, the null hypothesis was rejected at the .03 significance level. On the scale of 1 to 10, the sample mean for the known group is 2.82 ($n = 37$), the mean for the familiar group is 3.53 ($n = 47$), and the mean for the unknown group is 2.03 ($n = 40$). The degree of student familiarity with the item does influence whether or not the student believes the catalog.

Scheffé's test shows that the greatest difference between the mean belief for the three groups is between the familiar and the unknown group. The sample means for the familiar and unknown groups yield a difference of 1.51 with a standard deviation of 0.57. Students are more likely to distrust negative answers for familiar items than they are for unknown items. Recall that a student uses a response of "1" to indicate complete certainty that Millikin does not own the book.

Another way to test this hypothesis is to use 2 groups of familiarity as defined by student responses to the yes/no question "Have you heard of this book?"

Null hypothesis 2a

Whether a student has heard of the book makes no difference as to whether a student believes Millikin owns the book: M_y

TABLE 1

Students’ Search Skills
(n = 187)

Student Found Record for Book in Catalog	Record for Book is Actually in Catalog Yes	No	Total
Yes	54	2	56
No	10	120	130
No Answer	0	1	1
Total	64	123	187

TABLE 2

Does Millikin Own the Book?
(Based on Students’ Success in Finding Record in Catalog)
(n = 187)

Student Found Record for for Book in Catalog	Response to the Question “Does Millikin Own This Book?” Yes	No	NA	Total
Yes	55	1		56
No	9	117	4	130
No Answer			1	1
Total	64	118	5	187

TABLE 3

Does Millikin Own the Book?
(Search Successes Eliminated)
(n = 130)

Type of Catalog	Response to the Question “Does Millikin Own This Book?” Yes (%)	No (%)	No Ans (%)	Total (%)
Card Catalog	2 (3.1)	62 (95.4)	1 (1.5)	65 (50)
LCS	7 (10.8)	55 (84.6)	3 (4.6)	65 (50)
Total	9 (6.9)	117 (90.0)	4 (3.1)	130 (100)

$= M_n$ (where M_y = mean belief for cases where the student answered “yes” that he or she had heard of the item; M_n = the mean belief for cases where the student answered “no”; both M_y and M_n are on the scale from 1 to 10).

Analysis of variance comparing these two groups with the scalar data indicating students’ certainty that Millikin owned the book shows a significant difference between belief and familiarity with the book. The sample mean for the familiar books is 3.44 (n = 54), and for the unfamiliar books, 2.37 (n = 70). The difference between these means is 1.06 with a standard deviation of 0.48. The probability that the differences between the 2 means would occur by chance

TABLE 4

FAMILIARITY GROUPINGS OF BOOKS COMPARED WITH STUDENTS' ACTUAL FAMILIARITY WITH BOOKS (n = 187)

Book Title Grouped by Experimental Categories	Have You Heard of This Book? Yes (%)	No (%)	Category Totals —Summary— Yes (%)	No (%)
Known				
Famous First Facts	12 (66.7)	6 (33.3)		
Statistical Abstract	7 (31.8)	15 (68.2)		
Dead Zone	17 (81.0)	4 (19.0)		
Total known (61 items)			36 (59.0)	25 (41.0)
Familiar				
White House Experience	10 (45.5)	12 (54.5)		
Gone With The Wind	22 (95.7)	1 (4.3)		
Great Train Robbery	14 (63.6)	8 (36.4)		
Total familiar (67 items)			46 (68.6)	21 (31.3)
Unknown				
Politics of Agriculture	0	23 (100)		
Diffusion of Innovation	0	19 (100)		
Pesticides Use in India	0	17 (100)		
Total unknown (59 items)			0	59 (100)

TABLE 5

FAMILIARITY GROUPINGS OF BOOKS COMPARED WITH STUDENTS' ACTUAL FAMILIARITY WITH BOOKS (ELIMINATING *STATISTICAL ABSTRACT* AND BOOKS FOUND IN CATALOG) (n: 130 – 6 = 124)

Adjusted Researcher-Defined Familiarity Categories	Response to Question "Have You Heard of This Book?" Yes (%)	No (%)	Total (%)
Known	27 (73.0)	10 (27.0)	37 (100)
Familiar	27 (57.5)	20 (42.5)	47 (100)
Unknown	0	40 (100)	40 (100)

alone is less than .03.

TYPE OF CATALOG AND FAMILIARITY: THEIR EFFECT UPON BELIEF

Hypothesis 3
Users are more likely to believe the results from a computer catalog than the results from a manual catalog and the strength of belief is influenced by whether or not the material sought is familiar to the user.

Null hypothesis 3a
$M_c = M_l$.
$M_k = M_f = M_u$.
$M_{ck} = M_{cf} = M_{cu} = M_{lk} = M_{lf} = M_{lu}$
(M = mean belief; c = card catalog; l = LCS; k = "known"; f = "familiar"; u = "unknown").

Null hypothesis 3b
$M_c = M_l$.
$M_y = M_n$.
$M_{cy} = M_{cn} = M_{ly} = M_{ln}$
(M = mean belief; c = card catalog; l = LCS; y = student has heard of item; n = student has not heard of item).

All means are measured on the scale from 1 to 10.

The analysis of this hypothesis tests belief in terms of the interaction between the students' familiarity with an item and their use of a particular catalog. The set of null hypotheses was tested by using two-way analysis of variance. First, the procedure was performed using the "known," "familiar," and "unknown" categories for familiarity. The results showed that there were significant differences between the familiarity categories (at the .03 level of significance) but there was no significant difference between the 2 catalogs. This corresponds to the analysis and results of hypotheses 1 and 2 above. There is not enough evidence to reject the null hypothesis (3a) for interaction (.11 level of significance).

The hypothesis was tested again using students' responses to the yes-no question, "Have you heard of this book?" as the basis of familiarity. The overall hypothesis is supported at the 0.02 level of significance. The probability that average belief depends upon whether the student had heard of the book is high (.03 level of significance).

That differences are due to the interaction between the familiarity categories and the type of catalog is also apparent (0.035 level of significance). The interaction is as follows. First, students are more likely to believe negative results from the card catalog than they are negative results from LCS. Second, if the book is unfamiliar to them, students are more likely to believe negative results from LCS.

SUMMARY AND CONCLUSIONS

Interest in this study was stimulated by the frequent assertion found in library literature that users approach online catalogs less critically than they do manual systems. The assumption is that users are likely to believe that the results obtained from computer systems are more complete and accurate than results obtained from manual systems. This exploratory study does not support that assertion.

For the purposes of this study, belief in the catalog is defined as unquestioning acceptance of the results of a search. Students were asked to search for specific items and then to answer questions concerning their findings. Belief is measured by whether or not students questioned their results when no record for the item was found.

The students in this study are no more likely to believe the results obtained from a computer catalog than they are the results obtained from a card catalog. What did affect belief is the degree of familiarity with the item searched. Researcher-defined groups of "known," "familiar," and "unknown" items were tested against the degree of students' belief as expressed on a scale of 1 to 10. One indicates that the student is sure Millikin did not own the book; 10 indicates that the student is sure Millikin does own the book. The differences in belief that occurred between the familiarity groups would occur by chance alone less than 3% of the time. Using 2 groups of familiarity as defined by the students' answers to whether or not they had heard of the title, produced significant results at the .02 level of significance.

The third major hypothesis tested relates to the interaction between the familiarity of the item and the type of catalog and their combined effect on student belief. Using 2 levels of familiarity as determined by whether or not the student had heard of the book, the results show that there were significant differences between the familiarity categories and that these differences were due in part to the type of catalog used (.035 level of significance). If students had heard of the book and they did not find a record for it in the catalog, they were more likely to distrust the answer from the computer than the answer from the card catalog. If the book is unfamiliar to them and they find no record, they are more likely to distrust the answer from the card catalog.

In this experiment belief was tested only in terms of specific item searches. Only 9% of all the records not found in the catalog were questioned. This is despite the fact that the students had seen in class, in the library, one of the titles not in the catalog. The students knew how to search for records in the catalog and many of the items were familiar to them. The fact that the catalog (computer or manual) is so little questioned under these circumstances suggests that users probably accept, unquestionably, the results of all catalogs.

Belief can be defined and measured in many ways. This study compares user expectations in searching for specific items with the results obtained. Even if a particular title was unknown to the student, the success of the search is easily determined by whether or not a record for the title was found. Perhaps a search, such as a subject search, that is less easily defined might cause the user to question his or her skills and ask for help. Perhaps a user who finds too many, or too few items, or finds items not quite on target, will question the results. This is an area for further study.

Another area for investigation would be a test of adults on their belief in the results obtained from catalogs. Are adults more likely to question unexpected results than students? The sample in this study is a group of students with instruction in library skills. Does the students' knowledge of the library influence the degree of belief? This would be another area for study.

The students selected for the pretest were chosen because their instructor considered them to be particularly inquisitive. One of these students, when asked to explain the difference between his prediction that the book he had seen in class was owned by the library and the fact that he was unable to find it, wrote "I was sure Millikin owned it, but if the catalog says the book is not in the library, I believe it." It appears that even good students with good library skills are reluctant to question the catalog.

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Analysis of Selection Activities to Supplement Approval Plans

Jean L. Loup and Helen Lloyd Snoke

In 1986, 28 Association of Research Libraries (ARL) member libraries were surveyed for information about their use of approval plans for materials in philosophy and political science. Additional information was obtained concerning activities used to supplement their approval plan acquisitions. A second survey to follow up on the supplemental activity was conducted in early 1988. This paper describes the results of the two surveys, results that indicate the importance of supplemental activity in building research library collections. Implications for participation in resource sharing are explored.

In 1985, the authors of this paper received a cooperative Faculty-Librarian Research Grant from the Council on Library Resources (CLR) to study the use of approval plans and supplementary collection development practices in selected libraries that were members of the Association of Research Libraries (ARL). The study had two major objectives:

1. To compare approval plan profiles of the selected libraries in order to determine whether they are building essentially duplicate collections through their approval plans; and
2. To determine what methods and resources these libraries are using in collection development to supplement approval plans for philosophy and political science.

Underlying these objectives was the question: to what extent is resource sharing among these research libraries at risk from use of approval plans?

In the original grant report (1986) and a subsequent paper delivered at the February 1987 conference, "Acquisitions, Budgets and Material Costs: Issues and Approaches," the authors reported the conclusion that, while it is likely the libraries in the study are receiving very similar collections through the Blackwell North America plan, they are using the plan primarily to acquire core collections for instruction.[1]

This conclusion increased the importance of the second objective of the study. The 1986 telephone interviews revealed considerable variation in the supplementary selection practices among the libraries and prompted a follow-up survey in 1987–1988 to extend the information about such practices. This paper reports on the results of the interviews and survey, and comments on the importance of supplementary activity to resource sharing.

THE LIBRARIES STUDIED

Twenty-eight libraries were chosen for the study based on their use of Blackwell North America approval plans that in-

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cluded philosophy and political science. Data were gathered through Blackwell North America profiles for each library, by two mail surveys, and by telephone interviews. To assure promised anonymity, the libraries were grouped into three categories by size of collection using 1984–85 ARL statistics (the latest available when the original study was begun). Category I libraries had over 3 million volumes, Category II 2 to 3 million volumes, and Category III 1 to 2 million volumes. These categories were used extensively in the original report as well as in this paper. Although several libraries grew beyond the size limits of their category, for ease of comparison the original categories have been used to report the 1987–88 findings.

All twenty-eight libraries were contacted through telephone interviews with collection development officers or designated selectors. Interviews approximately thirty minutes long were held in spring or early fall 1986. Having obtained copies of the Blackwell profiles and additional data through a mail survey, the authors conducted the telephone interviews primarily to elicit information on the supplementary collection development practices used in addition to the approval plans. The data on languages selected, non-trade publications, variety of formats collected, use of standing orders, exchange and gift programs, retrospective purchasing practices, amount of time spent by selectors, analysis of interlibrary loan, collection evaluation/assessment activity, preservation activity, and involvement in resource sharing were an important part of the original report to the Council on Library Resources.

In order to update and extend the information on supplemental collection development practices used in these 28 libraries, a follow-up questionnaire was mailed in late fall 1987 to all the libraries. Twenty-four (85.7 percent) responded. Essentially the questions sought information on changes in collection practices reported in earlier telephone interviews. In addition, respondents were asked for information on selection sources regularly checked.

Both the interviews and the subsequent survey revealed considerable variation in the selection activities beyond approval plans of the participant libraries. Findings from both are reported and analyzed by topic.

PART I: MATERIALS ACQUIRED

The first 3 questions of the interview and the subsequent survey sought information about the materials acquired: language selected, the extent to which non-trade materials were purchased, and the variety of formats.

LANGUAGES SELECTED

Table 1 shows the total number of libraries in each of the 3 size categories (I—over 3 million volumes; II—2 to 3 million volumes; and III—1 to 2 million volumes) that reported selecting materials in foreign languages during initial interviews conducted in 1986. Only the largest libraries appear to be collecting in all or most languages for both of the subject areas studied. Some respondents in other size categories indicated differing patterns for philosophy and political science. One Category III library reported no foreign language selection.

Western European languages were those most frequently collected by libraries in both categories II and III. Respondents who reported limited foreign language selection most often mentioned French and German as the languages sought. Other special languages noted by libraries of various sizes include Polish, Dutch, Classical Greek, and Latin. A number of libraries indicated that they have strong Slavic programs.

Responses to the follow-up questionnaire in 1987–88 by 24 of these libraries indicated that only 2 had increased their selection in European languages, one in general for both philosophy and political science, the other specifically in Russian for political science materials. Another library noted decreases in foreign language collecting in general, but a continuing strength in Spanish language purchases.

No libraries in either Category II or Category III reported extensive selecting in Middle Eastern languages. Eighteen indicated that they did no collecting in these languages. One library said it would accept gift materials but would not purchase materials in these languages. Another library indicated an interest in collecting materials in Hebrew for philosophy. Only 1 library mentioned Middle Eastern languages in the follow-up report. This was to indicate that monographs in these languages were no longer being collected on PL-480.[2]

During the 1986 interviews, more interest was reported in collecting materials in Asian than in Middle Eastern languages. Chinese, Japanese, and Korean were mentioned most frequently. In addition to the 5 largest libraries, 3 others of varying sizes noted that they collected extensively in Asian languages for both philosophy and political science. Two others reported strong collecting in one of these subject areas, but none in the other. Thirteen libraries did not collect in Asian languages. No changes specific to Asian languages were reported in the follow-up survey.

Most of the libraries participating in the initial interviews reported that they did not collect in other languages and, according to responses on the follow-up questionnaire, this pattern seems to be continuing. One library did note an increase in African language collecting. Another reported that collection programs under PL-480 in Hindi and Urdu have been cancelled.

Two-thirds of the libraries responding to the follow-up questionnaire reported no change in foreign language collecting patterns since their initial response in 1986. Most of those indicating a change reported decreases. Budgetary constraints, some caused by inflation, were reported by several of the libraries that experienced decreases. One collection development librarian noted that under these circumstances foreign language purchases were reduced to a greater extent than were domestic purchases.

In summary, the larger the library, the more likely it is to collect broadly in languages other than English. European languages are the most frequently selected, followed by Far Eastern languages, then Middle Eastern. Other languages are, in general, collected only in the largest libraries. Some decrease in foreign language purchases was noted over the 2 years of the study. All the libraries included in this study are research libraries with collections of more than 1 million volumes. Yet limited resources in non-Western, or even non-English, languages in many of them may pose a threat to the research goals of their users. Moreover, the trend appears to be toward decreases in foreign language resources in several of these libraries. Certainly, one cannot ignore the value of maintaining strong foreign language collections in the largest libraries and the importance of these collections for resource sharing among the research community.

NON-TRADE PUBLISHING

The initial questionnaire sought information on the acquisition of non-trade publishing—specifically pamphlets, privately-published works, and society publications (see table 2 for a summary of the 1986 responses). Society publications were more likely to be purchased by the libraries in the study than other non-trade publications, and more likely for political science than for philosophy. Although pamphlets were the least likely to be collected, several libraries specified geographic areas from which they collected political science pamphlet materials, e.g., Latin America or West Africa.

Few changes were reported 2 years later. One library noted decreases due to overall budgetary constraints. Another experienced some decreased purchasing of non-trade materials in philosophy while reporting an increase of non-trade purchasing in political science. This large library noted that non-trade publications represented the leading edge of research in some areas of political science.

TABLE 1

LANGUAGE OTHER THAN ENGLISH SELECTED FOR PHILOSOPHY AND POLITICAL SCIENCE MATERIALS IN 1986

Library Category*	I (5 Libs. responding)						II (10 Libs. responding)						III (13 Libs. responding)					
Subject	Philos.			Polit. Sci.			Polit. Sci.			Polit. Sci.			Polit. Sci.			Polit. Sci.		
Response	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No
European	5			5			7	2	1	7	3		8	4	1	7	4	2
Middle Eastern	5			5				3	7		3	7		2	11		2	11
Asian	5			5			3	2	5	2	3	5	2	2	9	2	1	10
Other	4		1	4		1	1		9			10		2	11			13

*Category I—over 3 million volumes; category II—2–3 million volumes; category III—1–2 million volumes.

TABLE 2

ACQUISITION OF NON-TRADE PUBLICATIONS FOR PHILOSOPHY AND POLITICAL SCIENCE MATERIALS IN 1986

Library Category*	I (5 Libs. responding)						II (10 Libs. responding)						III (13 Libs. responding)					
Subject	Philos.			Polit. Sci.			Philos.			Polit. Sci.			Philos.			Polit. Sci.		
Response	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No
Private Publishing	5			5			5	2	3	6	1	3	5	5	3	6	6	1
Pamphlets	3	2		4	1		4	2	4	6	3	1	5	3	5	6	4	3
Society Publishing	5			5			7	2	1	9		1	5	5	3	10	3	

*Category I—over 3 million volumes; category II—2–3 million volumes; category III—1–2 million volumes.

Two other libraries reported increases in non-trade acquisitions for very different reasons. One said that more gifts of these materials were being accepted than formerly reported. The second library reflected a change in who does the selecting. The collection development officer reported that librarians, who are now selecting materials in both fields, are using more obscure sources to identify new materials than faculty did previously.

With one exception, the libraries reporting changes—either increases or decreases—fell in the middle-sized range (Category II), those with collections of more than 2 million but less than 3 million volumes.

Collection of non-trade publications appears to be somewhat related to the size of a total collection. The largest libraries in the study, those with holdings of more than 3 million volumes, reported extensive collection of materials from non-trade publishers more frequently. This was especially noteworthy in society publications. Libraries with 1 to 2 million volumes were more likely than others to report that they did limited collecting in private publishing or that they rarely or never collected from these sources. Strong collections in special areas or of one type of private publishing were reported by research libraries of every size in the study. Overall, private publishing is acquired more often and more extensively in political science than in philosophy.

FORMATS COLLECTED

In Osburn's examination of the concepts that make collection development the "essence of librarianship," he notes that collection development must integrate new forms of information as well as determine which materials should be preserved.[3] Each of the 28 libraries participating in the 1986 interview were asked in which of the following nonbook formats they collected materials on philosophy and political science: microforms, serials, manuscripts, maps, audiovisual materials, computer software, electronic data bases, and others. Table 3 summarizes these data by size of library.

As one would expect, all 28 libraries collected serials in both of these disciplines. Microforms were collected by all of the Category I libraries and most of those in other size categories, but there were some variations between the disciplines studied; fewer libraries reported collecting microforms for philosophy than for political science. Although the number of libraries collecting in all other formats were considerably smaller than for serials and microforms, a greater variety of formats were to be found in political science collections than in philosophy. This included a clippings collection in political science, reported by one library in the "other" category.

Few libraries indicated having collections of electronic data bases in the library, although several noted that some of these materials (e.g., ICPSR data tapes in political science and Thesaurus Lingua Grecia data base in philosophy) were administered outside the library. Audiovisual materials for instruction were reported to be administered externally also.

Some libraries noted that they were developing policies to expand the formats in which they would collect, especially in the area of computer software. One collection development officer responded that selection is "format blind" in theory. This seems consistent with Osburn's view of the collector's responsibility.[4]

All of the libraries with holdings of over 3 million volumes reported collecting in at least 5 formats other than books for one or both subject fields studied, and a majority of the Category I libraries are collecting in 7 formats. On the whole, the largest libraries reported

TABLE 3

FORMATS OTHER THAN BOOKS COLLECTED BY SELECTED ARL LIBRARIES FOR PHILOSOPHY AND POLITICAL SCIENCE IN 1986

Library Category*	I (5 Libs. responding)						II (10 Libs. responding)						III (13 Libs. responding)					
Subject	Philos.			Polit. Sci.			Philos.			Polit. Sci.			Philos.			Polit. Sci.		
Response	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No
Microforms	5			5			8	2		9	1		10		3	12		1
Serials	5			5			10			10			13			13		
Manuscripts	2	3		2	3			3	7	1	2	7		6	7	3	6	4
Maps	2		3	5				1	9	7	1	2	1		12	6	3	4
AV Materials	3	1	1	3	2			4	6	1	4	5	3	1	9	3	3	7
Computer Software	3		2	3	1	1		2	8		2	8			13			13
Electronic D B	2	1	2	2	1	2		1	9		2	8		1	12		5	8
Other			5	1		4			10			10			13			13

*Category I—over 3 million volumes; category II—2-3 million volumes; category III—1-2 million volumes.

collecting in a greater variety of formats than either the Category II or Category III libraries.

Little change in the variety and quantity of formats selected was reported in the follow-up survey. Only 2 libraries reported increases, both in political science. One library explained that funds allocated for political science were being channeled toward purchases of microforms and CD-ROMs. The second noted that the political science department had increased in size and that comparable budget increases allowed for new serial subscriptions. This library has also acquired recent gifts of papers from local political figures. Both of these libraries were in Category III, with holdings of less than 2 million volumes.

Other libraries in all size categories reflect increasing commitment to electronic data resources—bibliographic and numeric. In part, these resources are balanced by reduction, or lack of growth, in serials acquisitions. Two libraries reported serials cancellation projects due to rising costs. One library believed that their level of expenditure for maps and electronic data tapes was higher than that of most other academic libraries.

While the size of a collection appears to be related to the number of formats in a collection, it may be that ability to "risk," in terms of reallocation of resources, is a function of the smaller library rather than the larger. A future study could be designed to examine such a possibility and the implications for sharing of special resources.

PART II: ALTERNATIVE ACQUISITIONS METHODS

A second set of questions in the initial interview and follow-up survey sought information on alternative acquisitions methods, that is, standing orders, exchange and gift programs, and retrospective purchasing. In addition, the follow-up survey queried libraries about what sources were used to identify materials not acquired through approval plans. This question was added at the suggestion of interview respondents.

STANDING ORDERS

In 1986, most libraries reported having standing orders in both philosophy and political science; the remainder also indicated participation but with some level of limitation on such orders, either in 1 of the 2 disciplines or in both (see table 4).

One library indicated that, following a 30 percent budget cut 3 years earlier, there remained 13 standing orders in philosophy and only 1 in political science. While there was no indication that this library was attempting to reinstate any standing orders, another of the libraries, which responded positively to the use of standing orders in both sub-

TABLE 4

ALTERNATIVE ACQUISITION METHODS USED IN SELECTED ARL LIBRARIES FOR PHILOSOPHY AND POLITICAL SCIENCE MATERIALS IN 1986

Library Category*	I (5 Libs. responding)						II (10 Libs. responding)						III (13 Libs. responding)					
Subject	Philos.			Polit. Sci.			Philos.			Polit. Sci.			Philos.			Polit. Sci.		
Response	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No
Standing Orders	5			5			8	1	1	10			11	2		10	3	
Exchange	4	1		4	1		2	5	3	2	5	3	4	6	3	4	6	3
Gifts	3	2		4	1		4	6		4	6		5	6	2	6	6	1
Retrospective Purchasing	3	2		3	2		8	2		6	4		10	2	1	9	2	2

*Category I—over 3 million volumes; category II—2-3 million volumes; category III—1-2 million volumes.

jects, noted that they were working on filling the gaps left from a major cutback several years ago. Both of these are Category III libraries.

All of the libraries in Category I reported use of standing orders in both subjects. Two of the libraries that limited standing orders were in Category II and 3 in Category III.

Few changes in the purchases of monographs through standing orders were reported in the follow-up survey. Decreases attributed to budget cuts occurred in libraries in each size category—a total of 5 libraries in all. Increases were even fewer; 2 Category III libraries were making greater use of standing orders than they had indicated in the earlier interview. One noted that they were still adding back standing orders reduced in a 1983 budget cut. The other reported that they had experienced recent budget increases that allowed growth in standing orders. All other libraries reported no changes in this collection practice.

While there appears to be a slight relationship between the use of standing orders and the size of the library, changes in budget allocations seem to be reflected in the increases or decreases in standing orders, perhaps to a greater extent than with other acquisitions methods. One might ask what the long-term effect of eroding standing orders has on a research library's collection and whether decreases in standing orders have implications for resource sharing. For instance, if there are significant gaps in a library's collection that could have been avoided by continuing standing orders, does that require the resource sharing system to spend more on supplying these materials at the expense of provision for rarer research materials?

EXCHANGE AND GIFT PROGRAMS

In 1986, fewer than half of the 28 libraries surveyed carried on active gift-seeking programs in both philosophy and political science, as shown in table 4. Only one library reported no involvement with gifts, however. Most of the libraries indicated that they accepted gifts but made little or no effort to seek them. One collection development officer noted that they were beginning a gift-seeking program; another sought money but not materials. Only one mentioned a Friends of the Library group.

The pattern of activity in the area of exchanges was also diverse (see table 4). Slightly more than a third of the libraries indicated that they had an active exchange program. Others ranged from use in one subject only to very limited use in both areas. Six libraries reported having no exchange programs; 2 had had active programs in the past, but had dropped them, one because publications were no longer free. Two of the active programs concentrated on materials from a specified geographic area—one from Latin American and the other from Slavic countries. One librarian stated, "exchange can be an expensive means of acquisition."

Category I libraries were more likely to have both an exchange program and an active gift-seeking program than the libraries in either Category II or Category III.

On the surface it appeared that little had changed in 1988. Yet 2 of the Category I libraries had decreased activity, one through a review of exchange agreements, the other through reduction in staffing. A third Category I library was in the process of reviewing all exchange serials with the expectation that there would be some decrease. On the positive side, one library had increased selector review of gift materials, and another had recently added a full-time staff member in acquisitions for gifts and exchange and expected changes in the future.

It appears that exchange as a means of acquiring materials is declining significantly in the largest libraries, those same libraries that were most likely to have had exchange programs in the past. An issue that needs to be addressed is the extent to which materials previously acquired on exchange are now acquired through purchase or other methods. Are plans being made to make these materials available through resource sharing systems, or are they being forfeited?

RETROSPECTIVE PURCHASING

In the 1986 interviews, a majority of the libraries in each size category reported that they purchased retrospectively on a regular basis (see table 4). Most others indicated that they carried on a limited program in this area; only one library noted that they did not purchase retrospectively in either philosophy or political science.

Whether a library engages in retrospective selection depends on several factors; the strength of the existing collection, the interest of the faculty, the money available for such purchases, and the time available to search out needed titles. One collection development officer described her library as a "mature collection" in explaining its limited program of retrospective purchasing. One library reported that they purchase retrospectively only items still in print, while another spent nearly all of its firm order funds on retrospective buying. For the year of the first survey, this amounted to 2 million dollars! Faculty involvement and a selector's personal reading were among the methods used to identify potential purchases.

The growing availability of computer technology and software designed to reduce the search time required for retrospective selection was noted by some libraries in 1986. Two respondents indicated the usefulness of Blackwell North America's retrospective runs in checking the completeness of their collections, and one selector voiced the expectation that online access should enhance his ability to purchase retrospectively. In the 1988 follow-up survey, further comments supported this premise. Two libraries attributed increased retrospective buying to recent collection assessment projects; one mentioned specifically that work with the RLG Conspectus was revealing lacunae in their political science collection.

A majority of libraries, however, reported little or no change in their retrospective purchasing 2 years after the initial study. Those collection development librarians who did note a change in purchase patterns tended to have reduced purchases of non-current materials. Inflation and budget reductions, especially multi-year reductions in funding, were cited by one-third of the respondents as reasons for decreasing retrospective purchasing in favor of current publications. On a more positive note, one library said that their need for retrospective purchasing in political science had diminished since there were now fewer out of print materials that they did not already own.

Most of the libraries reporting decreases in retrospective purchasing were in the smaller size range (Category III), but one library in each of the other size groups also reported decreases. Increases were reported by libraries in each size category.

It appears that the potential time-saving benefit of computer technology in retrospective selection has not been widely realized by the research libraries in this study. Reduced budget allocations seem to have had a considerably greater effect on retrospective purchasing. The implications for future resource sharing point to a greater need to borrow out of print materials not now purchased and a diminished ability to lend these resources, even by major institutions.

SOURCES USED TO SUPPLEMENT APPROVAL PLANS

Participants in the initial study repeatedly commented on their interest in the variety of sources of selection used to supplement approval plans. In the follow-up survey conducted in 1987-88, participating collection development librarians listed the following as sources they regularly checked for selection in the fields of philosophy and political science: national bibliographies, significant journals checked frequently, brochures/advertisements, retrospective catalogs and bibliographies, and other sources.

Only in the case of West European bibliographies did the number of libraries indicating use of national bibliographies for selection exceed the number indicating non-use. A majority of the largest libraries (Category I) also reported using Canadian national bibliography in selecting philosophy materials. This was not the case with libraries in the other size categories. Only France, Germany, and Great Britain were specifically named by more than one library as countries whose national bibliographies are consulted. Table 5 shows percentages of libraries in each of the 3 size categories that indicated they use national bibliographies regularly in selecting materials for philosophy and/or political science.

These findings probably should not have been surprising. Delays in publishing national bibliographies are common, and are, therefore, of limited use as a selection aid for current materials. Their real value in selection is for retrospective purchasing. A number of participants in this study have indicated decreasing activity in retrospective purchasing.

Other types of sources were reported to be used more often than national bibliographies (see table 6). Most of the libraries in every size category reported using brochures and other advertisements in their selection process. A majority in every size category also reported using retrospective catalogs. Frequent use of significant journals, however, was indicated by a majority of Category II and Category III libraries. A Category I librarian explained the lack of regular use of journals by commenting that their approval plans pick up virtually all of the items reviewed in journals. Timeliness may be a contributing factor as well. Reviews in scholarly journals often appear long after the publication date of the title reviewed. Those libraries with comprehensive approval plans should be able to receive the title, determine its value to their collections, and acquire it before reviews appear.

The "other source" most often listed by libraries in all size categories was "Faculty." This seems a positive indication of user input in the selection process. "Selection slips" was another source listed by several libraries, a further confirmation of the value of timely information for choosing current materials. Specific titles (of journals and other sources) were requested, but a number of libraries responded that there were too many of these to make a list feasible.

PART III: TIME SPENT BY SELECTORS

A third topic about which information was sought focused on the amount of time spent by selectors. In both survey years the percent of time in each of the 2 subject areas studied varied greatly, as shown in tables 7 and 8. During the original telephone interviews, 25 respondents provided information regarding amount of time spent on selection; respondents for the other 3 libraries reported that no set time had been established for selection, that the time spent on selection was not known, or that there were no subject selectors. Three libraries reported that 50 percent or more of a selector's time was spent on philosophy, and 3 different libraries reported that 50 percent or more of their time was spent on selecting materials in political science. Most libraries reported spending considerably less time in selecting materials for either field, however. The mode for both fields and the median for political science was 20-29 percent of a selector's time. The median for philosophy was even less, 10-19 percent of a selector's time.

In 1988, 23 libraries provided estimates of the time spent on selection in each of the 2 subjects; the results indicated a decline in both subjects. Only one library reported that 50 percent or more of a selector's time was spent on philosophy and another library reported 50 percent or more spent on political science. As in the earlier interviews, most libraries reported spending considerably less time in selecting materials for either field. The mode and median for both were 10-19 percent.

Bryant's observations of the wide disparity in work load among subject selectors in large academic libraries are cor-

TABLE 5

USE OF NATIONAL BIBLIOGRAPHIES TO SELECT PHILOSOPHY AND POLITICAL SCIENCE MATERIALS IN 1988

	I		II		III	
Library Category*	(5 Libs. responding)		(8 Libs. responding)		(10 Libs. responding)	
Subject	Philos. (%)	Polit. Sci. (%)	Philos. (%)	Polit. Sci. (%)	Philos. (%)	Polit. Sci. (%)
W. European Countries	80	40	63	63	30	30
E. European Countries	20	40	25	38	20	30
African Countries	0	20	13	25	20	20
Asian Countries	0	20	0	13	10	20
Latin Amer. Countries	20	40	0	13	20	30
Canada	60	40	0	25	10	20

*Category I—over 3 million volumes; category II—2–3 million volumes; category III—1–2 million volumes.

TABLE 6

REGULAR USE OF JOURNALS, BROCHURES, AND RETROSPECTIVE CATALOGS TO SELECT PHILOSOPHY AND POLITICAL SCIENCE MATERIALS IN 1988

	I		II		III	
Library Category*	(5 Libs. responding)		(8 Libs. responding)		(10 Libs. responding)	
Subject	Philos. (%)	Polit. Sci. (%)	Philos. (%)	Polit. Sci. (%)	Philos. (%)	Polit. Sci. (%)
Significant Journals	40	40	63	75	70	90
Brochures	100	100	88	88	90	80
Retrospective Catalogs	80	80	75	63	60	50

*Category I—over 3 million volumes; category II—2–3 million volumes; category III—1–2 million volumes.

TABLE 7

PERCENTAGE OF TIME SPENT BY SELECTORS FOR PHILOSOPHY AND POLITICAL SCIENCE (1986)

	I		II		III	
Library Category*	(5 Libs. responding)		(10 Libs. responding)		(13 Libs. responding)	
Subject	Philos.	Polit. Sci.	Philos.	Polit. Sci.	Philos.	Polit. Sci.
50% or more		1		1	3	2
30–49%		1			1	
20–29%	3	1	3	3	2	4
10–19%		1	4	3	2	3
Less than 10%	2	1	2	2	3	2
No Response			1	1	2	2

*Category I—over 3 million volumes; category II—2–3 million volumes; category III—1–2 million volumes.

TABLE 8

PERCENTAGE OF TIME SPENT BY SELECTORS FOR PHILOSOPHY AND POLITICAL SCIENCE (1988)

Library Category*	I		II		III	
	(5 Libs. responding)		(10 Libs. responding)		(13 Libs. responding)	
Subject	Philos.	Polit. Sci.	Philos.	Polit. Sci.	Philos.	Polit. Sci.
50% or more				1	1	
30–49%		1			1	2
20–29%	2	1	3	3	1	3
10–19%	1	2	3	3	4	3
Less than 10%	2	1	2	1	3	2
No Response			2	2	3	3

*Category I—over 3 million volumes; category II—2–3 million volumes; category III—1–2 million volumes.

TABLE 9

COMPARISON OF PERCENTAGE OF TIME SPENT BY SELECTORS FOR PHILOSOPHY AND POLITICAL SCIENCE IN 1986 AND 1988

	Ranges (%)		Means (%)			
	1986	1988	1986		1988	
			Philos.	Polit. Sci.	Philos.	Polit. Sci.
Category I Libs. (Over 3 million vols.)	5–30	2–30	15.0	19.0	11.6	17.0
Category II Libs. (2–3 million vols.)	5–50	5–50	15.0	19.0	15.0	21.8
Category III Libs. (1–2 million vols.)	0–75	1–65	26.4	24.2	20.0	19.4

roborated by the results of the present study.[5] In 1986, the larger libraries showed the least variation in time allocated for selection in the 2 subject fields; the smaller research libraries (Category III) showed, on average, both the most variation and the greatest amount of time spent. While this remained essentially true in 1988, the difference in time spent is not as dramatic (see table 9). For those who are concerned about this variation, Bryant offers a formula for determining equitable work load that considers level of intensity of subject collection, budget allocation, number of selection tools screened, number of faculty in academic units served, and extent of collection management activities.[6] The question, of course arises; does less time spent on selection have an impact on the ability of a library to participate in resource sharing?

PART IV: EVALUATION ACTIVITIES

A fourth set of questions related to activities that are designed to examine the completeness of the collection, including the analysis of interlibrary loan, collection evaluation and assessment, and preservation. In addition, libraries were asked to comment on the resource sharing activities in which they participate.

ANALYSIS OF INTERLIBRARY LOAN

In 1986, most of the libraries surveyed had some involvement with review of interlibrary loan (ILL) requests as a part of the collection development process, but fewer than half described their program as active. Several reported having no program (see table 10). Libraries in Category III were more likely to engage in analysis of interlibrary loans than libraries in Categories I and II, contrary to most of the other collection practices reported.

Several of the libraries had established rules-of-thumb on what should be reviewed, such as serial titles requested 3 or more times during one year, or monographs published in the last 5 or 10 years. Few libraries seemed to use this review for retrospective buying, but rather for assessing what current materials were missing from the collection. One collection development officer was not convinced of the utility of such review, but left the decision up to the individual selector. Analysis of ILL seemed to be the result of random, personal preference rather than a policy decision or national pressure.

One selector reviewed the ILL requests sent to him with two questions in mind: Why was the item not in the library? and, Why did the patron want the item? He found three typical answers to the first question: (1) the item is a Ph.D. dissertation; (2) the item was published in 1974/75 during the last days of Richard Abel; and (3) the item was simultaneously published in the United States and the United Kingdom during a period when Blackwell North America and B. H. Blackwell did not have good control of such publishing and neither sent the title.

Two years later most libraries indicated no change in their practice, although one library had increased its activity by establishing a formal program in which forms are sent to selectors who review for purchase. Another had started a pilot program for purchasing certain titles requested of ILL. This had increased ILL staff involvement in collection development and decreased selector involvement. Two additional libraries indicated plans for increasing review of ILL. In one, a reorganized selector process was providing the opportunity; in the other, staff shortages were preventing the plan from moving forward. Decreased ILL analysis in one library was also attributed to a shortage of staff.

As another example of the use of technology in collection development activity, one library had purchased an ILL software program and planned to use it for analysis in years to come. If this is perceived to be helpful and a time saver for selectors, it may lead to more ILL analysis in the future. One senses, however, that a major stumbling block to more widespread involvement in analysis of ILL is the lack of a clear purpose for doing so. In other words, it is entirely possible that the reward is not great enough to account for the time spent.

COLLECTION EVALUATION AND ASSESSMENT ACTIVITIES

Only one library, a Category III library, indicated in 1986 that collection evaluation and assessment were primary activities, although most others were currently involved in some evaluation or assessment project. Only 2 libraries, both from Category III, reported no such activity. The most frequently mentioned activities included the National Collections Inventory Project, the RLG members' Conspectus work, and the national shelflist measurement. Other activities mentioned were the development of collection policy statements, checking bibliographies, and storage review.

The library that described collection evaluation and assessment as a primary activity is heavily involved in academic program development on its campus. The library provides an extensive statement (5-6 pages) describing the current holdings, gaps that might affect an instructional program, needs for reference material support, and any additional materials budget support required if a new program is to be introduced. Four to six such statements are prepared each year. One other library indicated involvement in the process of establishing new programs, and several others indicated involvement in assessment for accreditation visits.

There was little indication of a focus on user satisfaction as a criterion for collection evaluation although several librarians noted the importance of faculty contact and involvement, especially during times of serials cancellations.

In 1988, approximately one-third of the participating libraries reported an increase in collection evaluation and assessment in one or both subject areas studied. New degree programs, for which the state mandated an assessment of library resources available, were the impetus for collection evaluation in one library. Others reported that space problems, special projects in one or the other of the subjects, and increased training for selectors led to increased emphasis on collection evaluation and assessment.

Although one selector interviewed in 1986 speculated that the advent of the online catalog would have a major impact on the selector's ability to do collection evaluation and assessment, availability of the online catalog was not mentioned in 1988 as a contributing factor to increased assessment activity. Pressure of prospective or actual funding cuts was not specified in this context either. Use of the RLG Conspectus continued to be noted positively, however.

With increasing pressures on collections of all research libraries, it does not seem likely that collection evaluation and assessment activities will increase. Projects such as the Conspectus, which provide the opportunity to describe the character of a collection, will become increasingly important as libraries focus more on providing access to information rather than ownership.

PRESERVATION ACTIVITY

In 1986, several libraries indicated that they had no formal preservation program, although all libraries identified the existence of some preservation activity that usually involved selectors. Frequently, circulation staff referred damaged or brittle materials to selectors; occasionally the shelver referred materials. Several libraries had received grant money to assist in starting preservation programs.

Typical selector responsibilities include binding, replacement, microfilming decisions, and sometimes storage review. Several librarians mentioned the care they take in reviewing out-of-print catalogs to attempt not to order materials in need of preservation action upon receipt.

It is the area of preservation that shows the most dramatic change since 1986; half of those libraries responding indicated increased activity, including the recent hiring of preservation staff in one library.

A number of preservation projects were identified. In one library a major collection inventory combined with a bar coding project will involve sampling for preservation needs. Another library indicated a cooperative effort with the other major university library in the state. A third library reported that upon receipt of purchased older collections, the materials are thoroughly reviewed for insects, mold, and spores, as well as for brittleness. All are fumigated before being added to the collection.

Preservation of library resources has received great emphasis at the national and international level in recent years as the magnitude of the problem and possible steps toward its reduction have been publicized. Research libraries in particular have come to realize their vulnerability in this area. This study shows that the ARL libraries surveyed are moving to support a recognized need for planned action.

RESOURCE SHARING AGREEMENTS

In the 1986 interviews, most of the libraries indicated that they were at least somewhat involved with resource sharing; more than half stated that they were currently participating in one or more resource sharing agreements. Three libraries reported that they were not involved in resource sharing in either philosophy or political science (see table 10).

Half of the libraries were current members of the Center for Research Libraries (CRL); two others indicated that they had withdrawn from the CRL 2 years earlier. Two of the current members indicated that withdrawal was under consideration. Nearly one-third of the libraries were members of the Research Libraries Group at the time the 1986 interviews were held. (Three others joined shortly afterwards and before submission of the report to CRL in late fall 1986.)

As with collection evaluation and assessment, the pressures on research libraries' collections will provide the incentive for increased resource sharing activity. New advances, such as faxing full-text images and growth in the amount of information available in machine-readable formats, offer promise for timely delivery of information needed by scholars and researchers.

CONCLUSIONS—IMPLICATIONS FOR FUTURE RESOURCE SHARING

The results of the interviews and survey reported in this paper provide the answer to the second objective of the original research—to determine what methods and resources the participating libraries use in collection development to supplement approval plans for philosophy and political science. This study demonstrates diverse practices among the libraries with, in general, the largest libraries collecting more broadly and carrying on more supplementary activity.

Although approval plans are providing a life-line for some libraries in which selectors' time is minimal or even nonexistent, participation in such plans alone does not put resource sharing at risk. It is the failure to keep pace with more complex and time-consuming selection activities, leading to strong unique research collections that might do so. Such supplemental selection activities should be continued and increased efforts to individualize such activities should be maintained.

The findings of this study question the ability of some libraries to provide a strong base for future resource sharing. Reductions in funding for collections and staff appear to be taking a heavy toll

TABLE 10

EVALUATION ACTIVITIES USED IN SELECTED ARL LIBRARIES FOR PHILOSOPHY AND POLITICAL SCIENCE COLLECTIONS IN 1986

	I						II						III					
Library Category*	(5 Libs. responding)						(10 Libs. responding)						(13 Libs. responding)					
Subject	*Philos.*			*Polit. Sci.*			*Philos.*			*Polit. Sci.*			*Philos.*			*Polit. Sci.*		
Response	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No	Yes	Lim	No
ILL Analysis	1	3	1	2	2	1	3	4	3	4	3	3	9	2	2	9	2	2
Collection Eval./ Assessment	2	3		2	3		5	5		4	6		7	4	2	7	4	2
Resource Sharing Agreements	3	2		3	2		4	4	2	5	4	1	7	4	2	7	4	2

*Category I—over 3 million volumes; category II—2–3 million volumes; category III—1–2 million volumes.

among the research libraries surveyed. Throughout much of the country, the impact of a declining economy on collection development was evident in 1986 and continued to affect selection activities in 1988. Materials budgets have suffered while costs of publications needed by the research community continue to increase. In many cases staff reductions have made it difficult or even impossible to use some of the strategies recognized by respondents as important collection maintenance activities, e.g., monitoring ILL, purchasing retrospectively, assessing the collection systematically, and planning for resource sharing.

Although budget and staff reductions provide a partial explanation for the limitations in collection practices revealed in this study, it is not clear that these constraints alone are responsible for decisions made. One notes especially the limited and declining acquisition of non-English resources in almost all but the largest libraries, the decline of gift and exchange programs in even the largest libraries, and the limited acquisition of non-trade publications. Although the use of technology in such areas as collection evaluation, interlibrary loan analysis, retrospective selection, and preservation was recommended by some respondents as a way to increase productivity with a limited staff, few of the libraries surveyed, even in 1988, appeared to be making extensive use of available software programs. While collection evaluation appears to be increasing, there is little evidence of user participation and even less evidence of evaluation based on user satisfaction or need.

Except in the area of preservation, where the research libraries surveyed seem to have made considerable gains in a relatively brief time, change does not appear to come about quickly. It is of particular concern to note the slowness with which research libraries are moving to increased resource sharing.

Current pressures are inhibiting the ability of research libraries to serve the information needs of their faculty and students, and cooperative efforts appear to be the only solution. More research is needed to gain a better picture of the capability of ARL libraries to respond to the demands of resource sharing in the future.

REFERENCES AND NOTES

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Personal Name Variations: Implications for Authority Control in Computerized Catalogs

Tamara S. Weintraub

The effects of personal name variations on authority control and data retrieval in computerized catalogs are explored by studying the names of 395 persons receiving entries in the catalog of the University of California at San Diego libraries. Although 63% of the people receive entries for more than one title, nearly 82% of all persons have only one name form in all bibliographic transcriptions and the authority records of approximately 67% contain no references. Of those with only one transcribed form of name, 45% receive entries for 2 or more titles and the authority records of nearly 62% contain no references. Fullness of forename is the most common variation among multiple names for the same person. Enhanced search and retrieval programs will collocate bibliographic records associated with most individuals without the assistance of a full MARC authority file, even if a person's name varies in bibliographic transcription or controlled headings and references. Few local control problems are expected with abbreviated authority files.

Automation of library systems is essential for expanding access to information. The storage capacity and networking capabilities of computers make available greater amounts of information, and many of the data maintenance and communication barriers in manual systems can be eliminated. Nonetheless, because computer logic is so literal, existing control or access problems could be exacerbated (or new ones created) if the characteristics of the data stored in automated systems are not considered in systems design. Information about these characteristics contributes to an understanding of how certain computer programs, database structures, and cataloging rules affect the dual goals of authority control and information retrieval in the online catalog.

Powerful search and retrieval programs in computer library catalogs pro-

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vide access to information in ways not previously possible. Linking, transferring, or updating data that would be physically separated or repeated in manual catalogs often is accomplished more quickly and efficiently. Consequently, many catalogers are reevaluating and proposing changes to present cataloging rules and record formats, which are designed to accommodate the shortcomings of book or card catalogs. Gorman, for example, has suggested that current rules governing the distinction of main or added entries in bibliographic records might no longer be applicable in computer catalogs programmed to store, retrieve, and display one set of data in multiple ways.[1]

Rules and database structures that deal with the control of data making up these access points deserve even more serious attention because they affect not just the way information is accessed, but whether it can be accessed at all. Since computers' manipulating capabilities are tempered by their literal treatment of data, information (such as controlled headings and references) anticipating a computer's interpretive limitations must be present, or computers must become less literal so that access problems are avoided. The idiosyncracies of the data being recorded must be known so that they can be accounted for in catalog designs and systems.

This paper describes a study of personal names in the catalog of the libraries of the University of California at San Diego (UCSD). The findings provide information about the characteristics of multiple and single name forms in bibliographic transcriptions and authority records.

PREVIOUS RESEARCH

Personal name characteristics and retrieval in online catalogs have been examined in previous studies. Thomas found that variations in fullness and word-order inversions were the greatest differences between authorized forms of names and their references in the University of California online catalog, MELVYL.[2] She showed how keyword and right-hand truncation programs might eliminate the need to create references for these types of variations in authority records as long as established names are the most complete form.

Taylor further assessed the usefulness of full authority records in online name searches. Nearly one-half of her sample authority records provided no assistance, but keyword or truncation programs would have improved 40% of the search failures.[3] She recommended excluding authority records from the catalog when no cross references were needed. System indexes, containing names and cross references from both the authority and bibliographic files, were suggested as less costly and more accurate searching aids when used in conjunction with the enhanced computer programs.[4]

Watson and Taylor similarly concluded that many authority records in the Library of Congress Name Authority File (LCNAF) would provide little or no assistance to users of an online catalog.[5] Either these records contain references that are irrelevant in systems with keyword or truncation capabilities, or they contain no references. Nonetheless, the authors questioned whether other information recorded in authority records (such as source citations) might warrant the continued use of full authority records even for those names without references.[6]

Evidence that improved access to bibliographic records in the catalog can be achieved must be available before full MARC authority files are scaled-down in size or dismantled. In the late 1970s, Kilgour hypothesized that minimal human intervention would be required to manipulate data in the machine environment; but Jamieson and others cautioned that the computer's present capabilities cannot compensate for a lack of database structure.[7,8] Relying solely on electronic programs to control data in the absence of an authority structure would be a disservice to catalog users.

Information about frequency and types of name variations in both bibliographic and authority files is necessary for an understanding of how to resolve or avoid conflicts in an automated catalog. Such information would also help clarify some of the long-term effects (on cost and catalog users) of eliminating data in the authority file. Watson and Taylor identified some types of references in authority records that should respond to enhanced searching features, but they did not examine transcribed name variations.[9] Shore studied the occurrence of author's name variations on actual title pages, and compared them to authorized headings for the same individuals.[10] She did not, however, examine variation types.

In a study of personal name variations in bibliographic records in the University of Chicago catalog, Fuller discovered that the transcribed names of 82.4% of persons in her sample do not vary.[11] She also determined that only one form of name would appear in LC-MARC authority records for 84.4%.[12] She examined types of differences among variant names for each person although she compared each form with only the earliest form found.

OBJECTIVE

The objective of this study is to provide a more complete picture of personal name characteristics in bibliographic and authority files. This is accomplished by examining a sample of transcribed names and their related authorized headings and references, and all types of differences between any variant name forms. Such information can be used to assess the value of recording all, some, or any names or references in separate authority files for online catalogs.

METHODOLOGY

To accomplish this objective, personal names in bibliographic transcriptions and authority records were analyzed and compared. The population sampled was personal name headings in UCSD's new automated catalog, INNOPAC. At the time of sampling (December, 1988) the catalog held 721,000 records, representing approximately 73% of UCSD holdings. Even though the complete file was not yet available, records for materials of all formats, time periods, and subjects held by UCSD libraries through September 1988 were included. The sample excluded over 60,000 works whose records had not yet been converted to machine readable format. No systematic bias resulting from the absence of unincluded items was expected because the subjects and publication dates of these items are well represented and intermingled throughout the entire catalog (except 10,000 Chinese language materials, which represent approximately .8% of all records). The possibility of a sampling bias, however, is recognized.

The sample consisted of 395 personal name headings. All variations of these names in bibliographic and authority records were examined. The minimum sample size was calculated to be 383 persons using the formula: $N = (z/e)^2(p)(1-p)$ where "e" is the error level of significance (taken as 0.05), "z" represents a 95% confidence interval ($z = 1.96$), and "p" is the probability that something will occur (in this case, based on a test sample, the probability that a person writing one title only will have an authority record with only one name, or .53).[13]

A simple random sampling method was used to first identify the sample of bibliographic records, using system-assigned record numbers corresponding to computer-generated random numbers representing the minimum sample size. Main and added entries in the records for all persons whose names appeared in title or statement of responsibility areas were selected for study. In cases where no statement of responsibility was present (such as in many records that predate the *Anglo-American Cataloguing Rules,* 2d ed. [*AACR2*]), headings appearing as main entries only were counted.[14] This was done to ensure that all persons with entries in the catalog had the opportunity to be included since each bibliographic item is represented by only a single record. In order to avoid a selection bias favoring prolific authors, headings appearing in records that do not represent those authors' earliest publications in the database were disregarded.[15]

This sampling procedure is considered optimal since all records in the automated catalog originally were thought to be entered randomly with no clustering by letter, publication date, format, language, or subject. Additionally, each record in the database is assigned a unique and consecutive system number upon entrance with no known breaks in numbering. This made sampling relatively easy. It was discovered after the study that the system vendor actually arranged records from the initial tape load according to record numbers from the Online Computer Library Center (OCLC) database. Nonetheless, because of retrospectively converted records, significant chronological biases are unlikely, although the possibility is recognized.

After headings were selected, all related authority records and all other bibliographic records with the same headings were collected and analyzed. Authority records were extracted from the Library of Congress Name Authority File (LCNAF) on OCLC and the supplemental UCSD New Authority File, which includes additional local references or authority records not in the LCNAF. All headings and references from each record were examined.

Bibliographic records were identified from the UCSD bibliographic file on the University of California online union catalog, MELVYL. Since UCSD's local online catalog was incomplete, MELVYL was used for this part of the data-gathering process because it contains a replica of the complete UCSD catalog.

To put into context the number of potentially different forms of names for each person, a count was made of the number of titles associated with each distinctive non-subject personal name heading. Also, in order to fully comprehend the effect of transcriptive variations on name retrieval and control, it was necessary to compare all transcribed and controlled name forms (appearing in bibliographic and authority records) for each person. This provided data about the probability of multiple forms of names being added to a catalog for each person.

Finally, types of variations between multiple name forms were examined. "Name forms" refers to the spelling (including diacritics, spacing, capitalization, and punctuation) and arrangement of terms in names of a single person. Descriptions and examples of categories considered for both transcribed and authority record name forms appear in appendix A. All types of variations among all name forms were counted if present, but each type was counted only once for each person. For example, for an individual with the names "John P. Smith," "J. P. Smith," and "John Smith," "fullness of forename(s)" (which appears twice—between the first and second, and second and third forms) was counted only once; "added initial(s)" (which appears between the first and third, and the second and third forms) also was counted once as another type of variation.

Categories of variations are similar to those identified by Watson and Taylor, Fuller, and Tillett.[16] However, there are some differences. For example, "surname" is used in this study to describe the last term in normal-word-order transcriptions (which may or may not be entry elements in headings); "entry element" describes *AACR*- or *AACR2*-formulated headings and references taken from authority records (referred to as "surname" by Watson and Taylor). Fuller refers to the term in a transcribed name that appears first in *AACR2*-form as "entry element," and Tillett does not isolate individual parts of the name in her taxonomy for name relationships. The distinctions are made here to better identify variation points in transcriptions.

RESULTS

Figures showing the number of titles for which each person received a non-subject personal name entry differ significantly from those of most previous studies. Of the 395 persons represented

TABLE 1

Titles Per Person in Catalog
(N = 395)

No. Titles	No. Persons	% Persons*
1	145	36.7
2	63	16.0
3	41	10.3
4	38	9.6
5	20	5.1
6	16	4.1
7	8	2.0
8	12	3.0
9	5	1.3
10 to 108	47	11.9
Total	395	100.0

*95% confidence interval: 7.8 to 9.9.

TABLE 2

Sample Differences (T-tests)
(p1 = .367)

Sample	p2	t
Potter (UW)	.693	12.73
Potter (UI)	.635	10.04
Fuller (UC)	.619	6.63
McCallum/Godwin (LC)	.657	12.11
Papakhian (IUS)	.476	4.04
Papakhian (IUP)	.612	9.16

by headings sampled, 36.7% (145) have entries for only one title (see table 1). Potter found that 69.3% of all persons represented in the University of Wisconsin-Whitewater Library catalog, and 63.5% in the University of Illinois at Urbana-Champaign Library catalog, have entries for one title only.[17] Fuller found this same single-incidence to be the case for 61.9% of all persons represented in the University of Chicago Library catalog.[18] McCallum and Godwin's research revealed nearly the same for the LC MARC II bibliographic file at 66%.[19] Papakhian, however, discovered that single-incidence personal names account for only 47.6% of all names in the sound recordings catalog of the Indiana University Music Library card catalogs (although this is true for 61.2% of all names in the printed materials catalog).[20]

With a 95% confidence interval ranging from 4.694 to 7.277, Papakhian's findings for the sound recordings catalog fall within the same range as the findings of this study. Nonetheless, t-tests between this study's sample and those of all the other studies verify that the differences are significant and not due to chance (see table 2).

The high percentage of persons receiving more than one personal name entry in the UCSD catalog can possibly be attributed to the fact that approximately one quarter of the catalog was not included in the initial sampling, although the sample of names is thought to be a valid representation of the entire catalog. Another reason might be that UCSD owns a large number of special collections of works by prolific literary writers, thereby skewing the figures toward persons represented by multiple entries. However, the sample represents names in titles for a variety of subject areas, disciplines, and publication dates, so it is not clear why UCSD's collection differs from others.

Given the large number of persons

with entries for more than one work, it is interesting to see that the names of 81.5% (322) appear in one form only in all bibliographic transcriptions (see table 3). This figure is close to Fuller's finding of 82.4%.[21] A t-test conducted with the two samples verifies that the differences are insignificant.[22] Name variations in authority records are also low. Only one name (a heading with no references) is recorded in the authority records of 66.6% of the sample population (263 people) (see table 4). The greater percentage of variations in the authority file may be explained by the fact that authority records include as references variants from sources of information other than the chief sources (which were excluded in the count of bibliographic transcriptions).

The large number of authority records with no references differs significantly from Fuller's finding of 84.4%,[23] but is very close to Watson and Taylor's finding of 68.3%.[24] T-tests verify that the difference between this study's sample and Fuller's is significant,[25] but that the difference with Watson and Taylor's is not.[26] There may be several reasons for these discrepancies. Fuller formulated authority records according to title-page bibliographic information in the University of Chicago catalog. By examining actual authority records, this study and Watson and Taylor's study considered information that might not be found in all catalogs, but which full authority work would reveal. Also, since LCNAF records are considered, many forms of names for which headings or references would no longer be made (i.e., unused complete forms of names, as was done under 1967 *AACR* rules) were included, possibly inflating the number of names in some authority records. Thus, variations might actually occur in less than the 33.4% of names represented in the authority file measured here.

A comparison of transcribed name forms to titles reveals that 44.8% (177) of all people whose names appear in one form only in bibliographic transcriptions received entries for more than one

TABLE 3

TRANSCRIBED NAME FORMS PER PERSON
(N = 395)

No. Forms	No. Persons	% Persons*
1	322	81.5
2	62	15.7
3 to 6	11	2.8
Total	395	100.0

*95% confidence interval: 4.2 to 9.7.

TABLE 4

CONTROLLED NAME HEADINGS AND REFERENCES PER PERSON
(N = 395)

No. Forms*	No. Persons	% Persons†
1	263	66.6
2	101	25.6
3	23	5.8
4	3	0.8
5 to 32	5	1.4
Total	395	100.2‡

*Includes headings and references (1 name indicates no references).
†95% confidence interval: 5.7 to 10.3.
‡Percentage does not equal 100.0 due to rounding.

title (see table 5a). Another comparison of controlled headings and references to titles shows that 37.7% (149 people) with entries for 2 or more titles have authority records with no references, as table 5b shows. These figures demonstrate that the presentation of names on bibliographic items is consistent for most authors, and the authority file reflects this consistency. Furthermore, the cross-tabulation of transcribed names with controlled headings and references clearly shows that most names, as taken from title pages, match established forms in authority records (see table 6). Of the persons represented by headings sampled, 61.8% (244) appear the same in all bibliographic transcriptions and with no references in authority records.

The most common type of variation among name forms is fullness of forename(s) (see table 7). This accounts for 38.8% of all transcribed name variations and 34.1% of all variations among controlled headings and references. Added initials is the second greatest type of variation at 27.2% for bibliographic transcriptions and 15.1% for controlled names. A comparison of these findings to Fuller's and Watson and Taylor's would not be valid because of measurement differences between the studies. However, all 3 studies found generally that fullness of forename (including initialisms or other abbreviated forms) accounts for a substantial proportion of total variations. Since the categories in this study break down name variation types in greater detail, the findings could be used to assess more specifically the effects of enhanced search and retrieval programs on access or control.

CONCLUSIONS AND RECOMMENDATIONS

These findings generally concur with those of other studies. Few individuals' names vary in bibliographic transcriptions or authority records, even for persons who receive entries in the catalog for more than one title. Furthermore, a significant proportion of people whose names appear only one way in bibliographic transcriptions have no references in their authority records. Fullness of forename(s) and added initial(s) are the most common types of name variations.

Controlled data contained in authority records were found to be fairly reliable predictors of name-form variations on bibliographic items. Names in the descriptive areas of catalog records, as transcribed from chief sources of information, differ infrequently from those

TABLE 5

TITLES VS. NAME FORMS PER PERSON
(N = 395)

		Name Forms					
		1		2+		Total	
		No.	%*	No.	%	No.	%
Bibliographic Transcriptions							
Titles	1	145	36.7	0	0.0	145	36.7
	2+	177	44.8	73	18.5	250	63.3
Total		322	81.5	73	18.5	395	100.0
Controlled Headings and References							
Titles	1	114	28.9	31	7.8	145	36.7
	2+	149	37.7	101	25.6	250	63.2
Total		263	66.6	132	33.4	395	100.0

*95% confidence interval: 4.2 to 8.9.
†95% confidence interval: 5.7 to 9.4.

TABLE 6

Bibliographic Transcriptions vs. Controlled Headings and References Per Person
(N = 395)

	Transcriptions							
	1		2+		3+		Total	
	No.	%*	No.	%	No.	%	No.	%
Controlled Headings and References								
1	244	61.8	17	4.3	2	0.5†	263	66.6
2	65	16.5	34	8.6	2	0.5‡	101	25.6
3+	13	3.3	11	2.8	7	1.8	31	7.8
Total	322	81.5	62	15.7	11	2.8	395	100.0

*95% confidence interval: 4.2 to 9.8.
†These variant transcriptions would not have been given references in authority records in accordance with *AACR2* rules for formulation of headings and references.
‡One of these variant transcriptions would not have been recorded in an authority record in accordance with *AACR2* rules for formulation of headings and references.

TABLE 7

Variation Type vs. Frequency

	Transcriptions (N = 103)		Headings & Refs. (N = 205)	
Type	No.	%*	No.	%†
Fullness of forename	40	38.8	70	34.1
Added initial(s)	28	27.2	31	15.1
Dif. forename(s)	14	13.6	28	13.7
Dif. surname	7	6.8	–	–‡
Other terms	7	6.8	2	1.0
Added forename(s)	6	5.8	27	13.2
Capitalization	1	1.0	0	0.0
Dif. entry element	–	–‡	21	10.2
Word-order inversion	0	0.0	20	9.8
Punctuation	0	0.0	5	2.4
Qualifier(s)	–	–‡	1	0.5
Total	103	100.0	205	100.0

*95% confidence interval: 15.1 to 19.5.
†95% confidence interval: 11.1 to 13.8.
‡Not counted.

recorded in an authority file. For this reason, a full authority file should serve as a reliable research tool for catalogers conducting authority work.[27] On the other hand, authority records usually contain information consistent with data found in the bibliographic file. In an online system many personal name authority records thus seem to be, as others have suggested, a duplication of information that contributes little more to the success of a personal name search query of the catalog than data in bibliographic records.

For such queries, enhanced search and retrieval programs (such as keyword, Boolean, or left- or right-truncation) should collocate associated catalog records sufficiently through controlled headings in the bibliographic catalog alone, with or without the assistance of a system index such as that suggested by Taylor. Furthermore, since few transcribed names vary, and most replicate controlled forms appearing in authority records, the same retrieval rate of multiple records associated with individuals might be expected if the enhanced programs are used for free-text searching of the descriptive areas of catalog records.

The potential accuracy of free-text searching in an online catalog might have further implications on the structure of catalog records. For example, it would no longer be necessary to include separate main or added entry headings for specific categories of names (such as single-form) as long as the transcribed names appear somewhere in the description exactly as they would appear in a heading. "Delimiters" appearing next to the names anywhere in the description could pinpoint such names as access points, much in the same way separate main or added entry fields are currently used. Further study on the feasibility of revised record designs such as this is necessary.

Finally, the value of full authority files and records in shared cataloging efforts and universal bibliographic control (UBC) must be considered in any discussion on authority file alterations. UBC represents attempts to bring about worldwide uniformity in the way bibliographic information is processed and presented for the purpose of providing complete and reliable access to anyone anywhere. This concept has become partially realized as more libraries contribute and rely upon cataloging information (including authority data) in bibliographic utilities.

The information currently found in full authority files might be necessary for further UBC efforts. An opinion poll on authority control conducted in 1984 by Tillett revealed that online resource authority files (available through networks for searching) were considered very valuable and useful tools by members of the Library and Information Technology Association.[28] Eliminating or ceasing the recording of some authority information might make these tools less useful. Certainly, the value to UBC in recording the results of local authority work depends upon the ability of individual cataloging agencies to contribute to shared authority files. Decisions on maintaining information not accepted outside of a local catalog would have little or no effect, although the decisions of contributors (such as NACO participants to the LCNAF) might.

Certain elements of current bibliographic and authority files (such as authority records for names without references, or some types of controlled references) that respond to the search and retrieval limitations of manual systems are no longer necessary in many computerized catalogs. Depending upon the types of search programs available in an online system, few control problems would result if some information were eliminated or not recorded in local files. Nonetheless, the broader and future effects on shared cataloging efforts of not recording this information must be considered.

REFERENCES AND NOTES

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9. Watson and Taylor, "Implications," p.13.
10. Melinda L. Shore, "Variation Between Personal Name Headings and Title Page Usage," *Cataloging & Classification Quarterly* 4, no.4:1–11 (Summer 1984).
11. Elizabeth Fuller, "Variation in Personal Names in Works Represented in the Catalog," *Cataloging & Classification Quarterly* 9, no.3:86 (1989).
12. Ibid.
13. Arlene Fink and Jacqueline Kosecoff, *How to Conduct Surveys: A Step-by-Step Guide* (Beverly Hills, Calif.: Sage, 1985), p.62.
14. Added entries were ignored because for such records it could not be determined easily whether the entry was based on information found in a chief source of information. Nonetheless, only two headings were excluded because of this.
15. Initially, the study included all of these names, making the original sample size 456. When the question of bias arose, the study was recast with a sample that excluded these names. However, both samples yielded nearly the same results. The findings presented in this paper are from the revised sample.
16. Watson and Taylor, "Implications," p.13; Fuller, "Variation," p.92–95; Barbara B. Tillett, "Considerations for Authority Control in the Online Environment," *Cataloging & Classification Quarterly* 9, no.3:10–11 (1989).
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18. Fuller, "Variation," p.81.
19. Sally H. McCallum and James L. Godwin, "Statistics on Headings in the MARC file," *Journal of Library Automation* 14:194–201 (1981).
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21. Fuller, "Variation," p.86.
22. t = 0.31.
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24. Watson and Taylor, "Implications," p.13.
25. t = 5.36.
26. t = 0.05.
27. Dickson and Zadner found that catalogers consult other sources in addition to the authority file (in this case, the LCNAF) in confirming or establishing a name used in a local catalog. See Jean Dickson and Patricia Zadner, "Authority Control and the Authority File: A Functional Evaluation of LCNAF on RLIN," *Cataloging & Classification Quarterly* 9, no.3:57–71 (1989).
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APPENDIX A: TYPES OF NAME VARIATIONS

A. Categories
   1. Fullness of forename(s)
   2. Added initial(s)
   3. Different forename(s)
   4. Different surname (for bibliographic forms only)
   5. Addition of other terms
   6. Added forename(s)
   7. Capitalization
   8. Different entry element (authority records only)
   9. Word-order inversion
   10. Punctuation
   11. Qualifiers (authority records only)

B. Examples
   1. *Fullness of forename(s)*

      Includes cases in which any forename in one or more names is fuller than forenames in others (e.g., from initials or shortened forms of names). "Forename" is any term in a name, excluding titles of honor, the last term (usually surname) in transcribed (normal word-order) names, or the term established as entry element in authorized forms of names.

      Bibliographic forms:

      W. F. Oakshott
      William Oakshott
      (added initial also counted for this person)
      Myron G. Eisenberg
      M. G. Eisenberg

      Authority record forms:

      Oak, Henry Lebbeus
      Oak, Henry L.
      Smith, Kenneth A.
      Smith, Ken
      (added initial also counted for this person)

2. *Added initial(s)*
Includes forms of names in which one or more have initials and others have fewer or none. Does not include initials that stand for a fuller term in another name (see Fullness).
Bibliographic forms:
David Constantine
David J. Constantine
Authority record forms:
Bottomore, T. B.
Bottomore, Tom
(fullness of forename also counted for this person)

3. *Different forename(s)*
Includes (but not limited to) romanization, transliterations, language, and spelling. Does not include shortened forms, word-order inversions in which all the terms are otherwise the same, particles that are part of the surname, additional terms in which all other names match, or terms that vary only by punctuation or capitalization.
Bibliographic forms:
Mikhail Zoshchenko
Michael Zoshchenko
Authority record forms:
Nieva, Francisco
Nieva, Paco
David, Lawrence M.
Deivis, Lorens

4. *Different surname* (for bibliographic forms only)
Includes romanization, transliteration, spelling, and additional names or particles that are part of the surname. Does not include capitalization, punctuation, nor word-order inversions in which all terms otherwise match.
Jeanne Quint Benoliel
Jeanne C. Quint
IUrĭi Sherekh
George Y. Shevelov
G.Y. Serech
(different forename and added forename also counted for this person)

5. *Other terms*
Includes titles of honor or nobility, and place names, used in addition to, or in place of, forenames.
Bibliographic forms:
Roy Harrod
Sir Roy Harrod
Dwight D. Eisenhower
General Eisenhower
President Eisenhower
Authority record forms:
Pelletier, Jean, of Lyons
Pelletier, Jean

6. *Added forename(s)*
Includes situations in which one or more forms of names have more forenames than others. All forenames are considered (e.g., first and middle names); does not include titles of nobility or other non-name terms, initialisms, nor particles that are part of a surname.
Bibliographic forms:
Deming Bronson Brown
Deming Brown
Gayle Benjamin Pickwell
Gayle Pickwell
Authority record forms:
Neilsen, Carl
Nielsen, August Carl
Miller, Helen Hill
Miller, Helen Day Hill

7. *Capitalization*
Includes variations in letter case for terms that match otherwise.
Bibliographic forms:
J. H. van Lint
J. H. Van Lint
Authority record forms:
De Vos, Dirk
Vos, Dirk de
(different entry element also counted for this person)

8. *Different entry element* (authority records only)
Includes (but not limited to) romanization, transliteration, language, spelling, and differences not resulting from word-order inversions of surnames (such as completely different terms)
Blazek, Douglas
Wellinher, Peter
Nyilas, J'ozsef
Nilash, 'Iozhef

9. *Word-order inversion*
Includes change in order of some or all of same terms in a name. No occurrences for bibliographic forms were found.
Nzekwu, Onuora
Onuora, Nzekwu
De Vos, Dirk
Vos, Dirk de

10. *Punctuation*
Includes hyphens, diacritics, and other marks treated equally in arrangement and ordering of names. Also includes punctuation used in place of a letter or for abbreviated terms other than

forename initials punctuated by a full-stop.

Bibliographic forms:

S. Prokofiev
S. Prokof'ev

Authority record forms:

Fischer, *Heinz Dietrich*
Fischer, Heinz-D.
(Heinz Dietrich)

11. *Qualifiers* (for authority record forms only)
Includes the presence or absence of parenthetical terms placed in a name in accordance with cataloging rules.

Considine, Douglas Maxwell
Considine, Douglas M.
(Douglas Maxwell)

Book Reviews

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How to Catalogue: A Practical Handbook Using AACR2 *and Library of Congress,* 2d ed. 230

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Our Past Preserved: A History of American Library Preservation, 1876–1910 235

USMARC Format for Holdings Data, Including Guidelines for Content Designation 236

Academic Libraries: Research Perspectives. Ed. by Mary Jo Lynch and Arthur Young. ACRL Publication in Librarianship, no.47. Chicago: American Library Assn. 1990. 271p. paper, $27.50 (ISBN 0-8389-0432-3). LC 90-32120.

This excellent book reflects both good writing on the part of the eight individual authors and a careful controlling hand on the part of the editors. The work forms a coherent whole, yet each paper can be read without reference to the others. Although directed toward academic librarians with active research interests, all librarians will find this collection rewarding, for the knowledge base underlying much of librarianship is evident in this substantive review of recent research and current issues. The result, an important contribution to our professional literature, is an appropriate starting point for exploring or preparing to conduct research in most aspects of librarianship.

An "Introduction" and an "Epilogue" by the editors serve to unify the eight chapters listed below. Also included are lists of research questions of interest to the Association of Research Libraries and the Council on Library Resources, as well as author and subject indexes.

- "Collection Development and Management," by Charles Osburn, provides a broad view and includes sections on organization and staffing, size and growth of collections, the core concept, selection, and the environment of collection management.
- "Bibliographical Control," a bibliographic essay on descriptive cataloging, classification, and subject-heading assignment by Elaine Svenonius, is my favorite chapter. She includes a discussion of attempts at automatic cataloging and classification and the development of expert systems for these purposes.
- "Access Services," by Jo Bell Whitlatch, is a discussion of the logical and

physical dimensions of access.

- "Instructional Services," by Mary W. George, elevates library use instruction from simple directions on how to use the catalog to imparting the skills needed for identifying, locating, and accessing information to meet individual needs.
- "Bibliometrics: Library Use and Citation Studies," by Paul Metz, provides a quick overview of a huge body of literature from which he has described selected items. Readers unfamiliar with this field should first read "Bibliometrics and Citation Analysis," by Danny P. Wallace in *Information Science for Library Professionals*, edited by John N. Olsgaard (Chicago: American Library Assn., 1989).
- "Insurmountable Opportunities: Advanced Technology and the Academic Library," by William Gray Potter, synthesizes the literature on advanced technology in libraries in the last five years, noting that the new technologies are "converging to establish the foundations for a new generation of library services."
- "Analysis and Library Management," by Malcolm Getz, addresses the matter of "how good research can be most valuable for managers."
- "Management Theory and Organizational Structure," by Beverly Lynch, looks to the next decade with a review of the literature that reports the primary research on libraries as complex organizations.

This book is not meant to be read cover-to-cover at one sitting. It should be kept handy, so that it can first be read, digested, and absorbed section-by-section, and, second, so particular sections can be consulted in response to immediate needs.—*Lawrence W. S. Auld, East Carolina University, Greenville, North Carolina.*

How to Catalogue: A Practical Handbook Using* AACR2 *and Library of Congress. 2d ed. By Liz Chapman. London: Clive Bingley, Library Association (distr. in U.S. by American Library Assn.), 1990. 86 p. $17 (ISBN 0-85157-427-0).

Chapman is librarian, Institute of Economics and Statistics, University of Oxford. This revision of the 1984 edition was prompted by the increasing use of automation in cataloging and the 1988 revision of the *Anglo-American Cataloguing Rules*, 2d ed. (*AACR2*). The handbook is a guide to procedures inherent in the "mark and park" school of cataloging in which copy is received from a centralized source. This work is not intended to be an aid to original cataloging.

The book is alphabetically arranged by the name of a cataloging procedure or concept. The author cites *AACR2* rule numbers for some topics, such as "Conferences . . . (24.7)." Included is a list of common abbreviations, a bibliography citing traditional cataloging reference tools, and an index.

Some of the entries merely list the steps for accomplishing the procedure. "Added copies (and reprints by the same publisher)" lists steps for adding copies to the collection.

Other entries give theoretical information. The explanation of cuttering is concise and useful. An extensive discussion of the structure of *Library of Congress Subject Headings* (*LCSH*) is helpful to the librarian who is just learning to apply *LCSH*.

The author states that the handbook provides a "general picture" and is not reflective of policy in a specific library. However, policy intrudes throughout the book and will provoke questions from novice catalog librarians, library assistants, or students, all of whom should study this book only under the guidance of an experienced catalog librarian. The topic, "Exceptions to Library of Congress," contains policy rather than objective information about applying the K and Z classes, uniform titles, series classification, and variant spellings.

Aside from the policy statements and the conscious omission of the topic "MARC," this handbook provides basic training for students, library assistants, or the "one-person library" about procedures necessary for creating and maintaining a library catalog. The British viewpoint provides details of interest to the student of comparative librarianship.—*Kathleen Joyce Kruger, Colorado State University, Fort Collins.*

Introduction to Indexing and Abstracting. 2d ed. By Donald B. Cleveland and Ana B. Cleveland. Englewood, Colo.: Libraries Unlimited, 1990. 329p. $32.50 U.S., $39.00 elsewhere (ISBN 0-87287-677-2). LC 90-34493.

The table of contents, spread over five pages, seems to promise everything you always wanted to know about indexing and abstracting. But turning next to the index (as one should in a book on indexing), one finds that its six pages constitute barely two percent of the indexable part of the book—too skimpy even for a trade book and certainly for this book whose index should serve as a model for its readers. Checking further for subjects one would expect to be covered, one looks in vain for entries such as abbreviations, acronyms, subheadings, prepositions, inverted headings, singular vs. plural form of headings, symbols, and other topics that are notoriously difficult for the beginning student of indexing. Actually, most of these subjects are discussed somewhere in the text, but the index does not offer any clue to them. Alphabetization has locators only at 46–47, but a perusal of the text reveals that this important topic is also treated on pages 45, 93, 115–17. Although the issue of word-by-word vs. letter-by-letter filing is discussed on page 116, the index has no entries for it at all. Filing of numerals, symbols, and letters by ASCII code, discussed and exemplified on page 46, has no entries under ASCII, filing, numerals, or symbols. Conversely, the entry for classified indexes has four subheadings, all leading to page 56, where the subject is dealt with on no more than half a page! The entry for abstracts has sixteen subheadings, but length of abstracts and slanted abstracts are not among them and have separate entries.

Was this travesty of an index compiled according to the authors' advice to their readers? Quite probably. In the text, one finds again a large number of examples consisting of silly and clumsily made-up entries featuring cats, while actual examples of printed indexes and thesauri are left without any explanation of labels (e.g., in Example 1) or format (e.g., in Example 54, which shows mathematical text mixed up with its computer typesetting codes, something not obvious to the uninitiated). The explanation of chain indexes (now an almost extinct species) is entirely misleading, and the accompanying example of the index terms "elephant" and "fat man" (without any indication of the relationship between them) is preposterous and irrelevant. An example of *see* references (a topic not traceable through the index) wrongly advises to make such references when it would be much better to make direct page references if there are no more than one or two. Such examples and most of the "rules" given serve only to disorient and mislead the reader.

Problems of personal names are exemplified several times by a fictitious Homer Disraeli, who, however, shares space in one example with the real names of Dwight D. Eisenhower and Albert Schweitzer; one wonders what's wrong with Isaac or Benjamin, two famous bearers of the Disraeli name (though not the owners of the "Disraeli Delicatessen," one of the silly examples the Clevelands offer their readers)? But these are quibbles, compared with the cursory (and partially erroneous) treatment of corporate and geographic names (neither topic traceable through the index). The admonition not to index New York under "York, New" is an affront to the intelligence of any reader, and so are inane statements such as "Abstractors do not win Nobel Prizes but they do build reputations"; "A music indexer must know something about music"; "[an editor] clearly avoids giving foreign language papers to someone who has absolutely no knowledge of that language"; and "mathematically oriented papers would not be sent to workers who obviously do not know a logarithm from a toad." Readers are also told that "the ages of [encyclopedia] users may extend from cradle to grave," which seems to imply that babies and corpses read encyclopedias.

Chapter X, a worked-out example of abstracting and indexing an article (the author's own, no other would do!), which has been left unchanged from the first edition because it "received such praise" (p. xiii), would be a challenge even for very experienced indexers who do know a logarithm from a toad, chock-full as it is with abstruse mathematics and complex formulae; it is definitely not an example on which beginners and students should cut their teeth. The thesaurus used for the chosen index terms, a highly idiosyncratic product originally compiled for the collection of one person, is out of print and would in any case no longer be suitable as a source for index terms in the rapidly changing field of information science.

Although readers are offered ample "suggested readings" after each chapter, many of these are either very old and therefore potentially misleading (e.g., Wheatley's 1879 book, virtually unobtainable in the U.S.) or irrelevant, including one of my own articles, which has no bearing at all on "the nature of information," yet is cited in chapter II. Another of my works, cited in the bibliography, has a subtitle not assigned by me; thanks for citing me so copiously, but no thanks for miscitation and sloppiness.

How does such a mediocre and fault-laden book get to be published in a second edition? Elementary, my dear Watson: there is currently no other textbook on the subject available, so teachers in library schools take whatever there is. As a former colleague, I would, however, still pass up this one until something better comes along.—*Hans H. Wellisch, University of Maryland, College Park.*

ISBD (CF): International Standard Bibliographic Description for Computer Files. London: IFLA Universal Bibliographic Control and International MARC Programme, 1990. 98p. paper (ISBD 0-903043-56-4).

As part of the five year ISBD review process, it was decided that machine-readable data files, subsequently termed computer files (CF), should not remain part of a revised *International Standard Bibliographic Description for Nonbook Materials*, but rather that a separate ISBD should be written for CF. The Joint Steering Committee for Revision of the AACR (JSCAACR) has been working for some time on the development of new rules for CF, and, by coincidence, the first meeting of the ISBD (CF) Working Group was held in London on the same three days in March, 1986 that the JSCAACR met in Toronto. There was daily communication between the two committees in the hope that the results of their deliberations would be as close as their separate mandates permitted.

However, international committees have their own dynamics, and, unfortunately, there are more differences in the two sets of rules than some of us had hoped. Expected differences are the result of the required harmonization with other ISBDs, additional ones of committee decisions. Those differences specific to CF range from the inconsequential (no space before the colon when listing the number of bytes/records/statements in area 3) to the significant (the contents of area 5 and its repeatable nature).

Since ISBDs are designed as a standard for the development of national cataloging rules and *AACR2R* is established as the standard in the English-speaking world, is *ISBD (CF)* a useful acquisition for cataloging departments? If a cataloger is knowledgeable enough to recognize the differences between *ISBD (CF)* and *AACR2R*, *ISBD (CF)* can be an ancillary tool to *AACR2R* because it offers more definitions, is more explanatory, has an appendix with examples of complete records, and has directions for cataloging scripts written from right to left and bidirectional scripts. There is an index.

It is, of course, an obvious acquisition for educational institutions where research into, and the teaching of, the development of cataloging and international agreements form part of the curriculum.—*Jean Weihs, Former Chair, JSCAACR, Toronto, Ontario.*

Language Distribution in Databases: An Analysis and Evaluation. By Gretchen Whitney. Metuchen, N.J.: Scarecrow Pr. 1990. 379p. $42.50 (ISBN 0-8108-2323-3). LC 90-34219.

For anyone who is interested in the coverage of English and foreign language materials in secondary services, this book contains a wealth of data. Whitney tests the assumption that English has become the language of science by examining the language distribution characteristics displayed in online databases between 1970 and 1984. She starts with a chapter on scientific communication and information policy, a description of various approaches to studying the language issue, and a particularly useful overview of the development of scientific literature and its attendant access services. The chapter ends with charts showing language coverage and country of publication coverage for all databases listed in several large database directories from 1982, 1985, and 1986.

Whitney exhaustively examines eight electronic files: *BIOSIS Previews, Chemical Abstracts, GeoRef, MedLine, National Criminal Justice Reference Service* (*NCJRS*), *Oceanic Abstracts, PAIS,* and *PsycInfo.* In each case tables are presented for all languages covered (with proportional breakdowns), and then (in most cases) graphs are used to show changes over several decades for one or more significant languages and countries of publication. This is followed by a chapter on database provider policies with respect to language and country of publication and a chapter on current document production statistics, based primarily on UNESCO data.

The general conclusion is that English language materials and materials published in the United States have increased in proportion to other languages and countries represented in databases. This finding, however, could reflect database provider practices rather than publication patterns, especially where monographic publishing is concerned. The text is accompanied by appendices with tables and charts additional to those highlighted in the text, a bibliography of related works, and an index. This book is recommended for library and information science schools, for database providers, and for research libraries that make use of secondary services in the sciences.—*Candy Schwartz, Simmons College, Boston.*

Library Perspectives on NREN: The National Research and Education Network. Ed. by Carol A. Parkhurst. Chicago: Library and Information Technology Assn., American Library Assn., 1990. 75p. paper, $10.50; LITA members, $9.50; quantities of 10 or more, $8.50 each (ISBN 0-8389-7477-5).

Senate Bill 1067, "The National High Performance Computing Act" (also known as the "Gore" bill and "The National Research and Education Network" or "NREN" bill) passed the Senate on October 25, 1990. As a compromise bill, however, it failed to make it through the House. The legislation will have to be reworked and reintroduced when the 102nd Congress convenes in January 1991. The publication that is being reviewed here, an expansion of the "Information Packet on NREN" distributed at the 1990 ALA LITA President's Program, is essential and timely reading for librarians and information specialists keeping abreast both of this particular legislation and of national networking developments generally.

The proposed National Research and Education Network (NREN), a "data superhighway" or electronic telecommunications infrastructure that would expand and upgrade the existing linked networks (such as NSFNET, BITNET, Internet), has become a major issue in national politics and a priority item for the research and education community. LITA devoted its President's Program at the 1990 ALA annual conference to a discussion of the NREN and the issues surrounding the proposed legislation. The fact that the program attracted more than 1,000 people demonstrates the pertinence of this topic. The monograph combines facts (chronology, legislation) with issues and opinions. It is attractively packaged with a glossy cover, and includes an excellent, up-to-date bibliography and a glossary of terms and acronyms.

In this publication, LITA's role is educational and not positional, emphasizes Carol Parkhurst, president of LITA from 1989–90, in her introduction. Thus it is extremely helpful to have a clear chronology detailing the history of the proposed legislation and the main points outlined in S.1067 and HR 3131, followed by discussion papers that examine the complexity of the issues surrounding the proposal from a variety of perspectives. The paper presented by Charles McClure, Ann Bishop, Philip Duty, and Howard Rosenbaum on social and behavioral considerations of the development of NREN is an excellent introduction of network problems and issues. The paper is clearly divided into sections defining the key issues, and goes on to make a series of recommendations. Like most of the articles, the language used is not technical. The emphasis is not on the "how to," but the "what if." John Garrett, of the Copyright Clearance Center, discusses the questions raised by the conflicts inherent in the right of creators to their property and the right of society to information in an electronic communications system. Susan Martin focuses on networking issues for librarians: what is our role, where do we fit in, will we be bypassed, is free information access for all a viable premise? A number of shorter papers address the current state of networking in a variety of library systems and types of information services. The final paper, by Edwin Brownrigg from the Memex Research Institute, was commissioned by LITA to provide a basis for a discussion of library participation in the establishment of NREN. It proposes ten principles for the operation of publicly supported networking, both within and beyond the NREN.

All in all, this is an extremely timely, information-packed publication. For those who attended the LITA president's program, updated information has been added and the bibliography expanded. For those who were unable to attend, this is a "must-read" publication on what will most definitely be a key issue in 1991. Will the national "data superhighway" come to pass, and how can we librarians influence the crucial decisions that will made?—*Gillian M. McCombs, State University of New York at Albany.*

Music Coding and Tagging: MARC Content Designation for Scores and Sound Recordings. By Jay Weitz. Soldier Creek Music Series, no.2. Lake Crystal, Minn.: Soldier Creek Pr. 1990. 302p. paper, $35 (ISBN 0-936996-36-6). LC 90-9776.

Jay Weitz, in his introduction, states that his book is a manual "detailing coding and subfielding conventions that allow the Machine-Readable Cataloging (MARC) format to communicate bibliographic information for scores and sound recordings" (p.xi). As Weitz also points out, his book is probably the first to offer a detailed explication of MARC for music since Ruth Patterson Funabiki and Karl Van Ausdal's *Music OCLC Users Group Tagging Workbook and Reference Manual* (1980). Weitz has not prepared a cataloging manual. He has produced a wonderfully clear and comprehensible aid to the coding and tagging of MARC bibliographic records for scores and sound recordings for use *after* the original cataloging is completed. Weitz emphasizes content designation and current (not retrospective) bibliographic input while clarifying the complexities of the MARC music formats.

Although the publication does not address every field and tag, it does include most fields found in music records, and does so from a *music-specific* angle. The examples—and there are many—come from actual music bibliographic records. The book's format is similar to that of the MARC format: explications of the fixed fields precede discussions of the control fields. Control fields, in turn, are followed by careful examinations of the variable fields.

The definitions for each field discussed in the text do not duplicate those given in Online Computer Library Center (OCLC) documentation. Instead, Weitz amplifies meaning by giving supplementary information. He impregnates his text with concise definitions.

Here are some areas of the MARC music formats that shine under his lights: Fixed Field Elements: reprint/reissues for scores and sound recordings, format of music, type of record; Control Fields: physical description, Library of Congress control number (especially the history and LC's application of these numbers since their inception in 1898), publisher number for music (copious examples), language codes ($h newly illuminated); Variable Fields: uniform title headings, title statement (fine presentation of ISBD punctuation as used in subfielding), edition statement, physical description (extremely helpful information on type of recording, especially analog versus digital technology for compact discs), series statements and headings, and notes (particularly reproduction notes).

The first two appendices list obsolete and pre-*Anglo-American Cataloguing Rules*, 2d ed. (*AACR2*) fields, and explain the "cosmetic differences among the OCLC-, RLIN- [Research Libraries Information Network], and WLN- [Western Libraries Network] MARC formats" (p.196). The third appendix consists of eighty-one pages of examples that illustrate formatted bibliographic records, for scores and sound recordings, in three parallel sections (OCLC, RLIN, and WLN formats). The index includes entries for both individual MARC tags and alphabetic field designations. As a dividend, Weitz's book is accompanied by a foreword from Richard P. Smiraglia, the series editor, which gives an overview of the MARC music formats, their evolution, and implementation by the bibliographic utilities and the Library of Congress.

Jay Weitz has been known for many years as a familiar and dynamic presence at the national meetings of the Music OCLC Users Group and the Music Library Association. It comes as no surprise that OCLC's music man has now produced a book that can help music catalogers avoid making the same coding mistakes and, in the process, perhaps, learn something about how a Quality Control Librarian thinks. Approached in this way, music catalogers might well discover that this coding manual will help them polish their work *before* their cataloging appears in the now internationally shared cataloging databases of the world's bibliographic utilities.

Weitz's manual is excellent, handy, and a necessary component of every music cataloging work station. It is the second fine publication of the Soldier Creek Music Series. Soldier Creek Press and the series editor continue to produce extremely useful, lucid monographs and might well have already captured the 1990s' specialty market for the best books on music technical services.—*Richard D. Burbank, University of Illinois at Urbana-Champaign.*

Our Past Preserved: A History of American Library Preservation, 1876–1910. By Barbra Buckner Higginbotham. Boston: Hall, 1990. 346p. $38.50 (ISBN 0-8161-1932-5). LC 90-35860.

Our predecessors were concerned with preserving books for future generations and with cost effective library management. They tried not to harm books with their repairs and they worried about air pollution from coal soot, heat and pollution from gas light, and temperature and humidity changes. Fire was a constant threat. Much literature was devoted to insect damage and control. Many new Carnegie libraries were being built, so they were interested in building design, location, and function. Photographic reproduction was in its infancy, and librarians hoped that it would help preserve information. When mechanization led to poor publishers' bindings, librarians lobbied the publishers for improvements.

Our Past Preserved is a compilation of writings about library preservation issues from late nineteenth and early twentieth century library literature, arranged by categories such as environment, user education, repair, and binding. Discussions of air pollution, insect control, and the design of bookends offer intriguing insights into the similarities and differences between then and now.

This is not a technical manual. The book focuses on preservation issues and their solutions as proposed and evaluated by contemporary librarians. It emphasizes books in circulating collections open to the general public, rather than rare books or private libraries.

According to the introduction, "this book explores the circumstances and forces that stimulated awareness of a significant library problem and led eventually to conscious, organized efforts to address it; they establish the Victorian period as the foundation for contemporary American preservation concerns and activities" (p.2).

The study begins with the birth of the American Library Association and ends shortly before World War I. This was a time of rapid growth of both libraries and librarianship and of technical changes in paper production and bindings. The final chapter contains an overview of the preservation activities of the period, including some evaluation of the efforts, and a brief summary of preservation activities to the present.

The author has extracted a great deal of information from library journals and annual reports and arranged it in a logical and readable fashion. It is well indexed, with an extensive bibliography. Early American preservation history has thus been made readily available to modern librarians.

The book contains no illustrations and few explanations of terms or techniques. Although there are references to technical manuals and dictionaries of terms, the inclusion of explanations would have made the book more accessible to the non-expert. The text is heavily footnoted, but the footnotes are primarily citations, not informational.

Preservation librarians will find this an entertaining and informative history. It is recommended for comprehensive collections in library preservation or library history.—*Martha Hanscom, University of Wyoming, Laramie.*

USMARC Format for Holdings Data, Including Guidelines for Content Designation. Prepared by Network Development and MARC Standards Office. Washington, D.C.: Cataloging Distribution Service, Library of Congress, 1989. 1v. looseleaf, $25 (ISBN 0-8444-0700-3). LC 89-600354. (Previously published under the title: *USMARC Format for Holdings and Locations.*)

The looseleaf *USMARC Format for Holdings Data, Including Guidelines for Content Designation* (hereafter *Holdings Format*) is designed to be a carrier for holdings and location information for three types of bibliographic items: single-part items (indicating location only), multi-part items, and serial items. The previous edition of the format was issued under the title *USMARC Format for Holdings and Locations* (1984).

Interest in developing this format initially arose in 1974, when the Conversion of Serials (CONSER) Project was begun. Actual development proceeded in 1981 from the initiative of the Southeastern Association for Research Libraries (SEARL), which needed such a device for a regional resource sharing program. After years of refinement and field testing that make an FDA drug trial seem precipitant by comparison, the format has reached its present improved state.

The *Holdings Format* is different from the other format family members, the bibliographic and authority formats, because it can either be embedded within a USMARC bibliographic record or be a separate record that is linked to a USMARC bibliographic record. The content of the *Holdings Format* is based on several standards, the most important of which are *Serial Holdings Statements* (ANSI Z39.44) and *Holdings Statements for Non-Serial Items* (ANSI/NISO Z39.57).

As with other format documents, the tags, indicators, subfields, and other format paraphernalia are presented in ascending tag order. Each section of the format presents the meaning of the

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tags, indicators, and subfield codes; contains a verbal description of its definition and scope; gives guidelines for applying content designations; and provides input conventions (e.g., field 022 does not end with a period). In addition, related USMARC documentation, or a related USMARC field, is also given when appropriate. Examples are provided within each field, and appendix B gives sample records of various types (e.g., serial with multiple copies, serial with gaps, multi-part item divided between two locations).

The format is intended to be used by anyone who manages or maintains inventories of serial holdings and would also be useful for such library operations as check-in and ILL, among others. The new format easily allows addition of local information such as copy specific data, institution specific data, and local processing data. Even though the format was not designed to support all local processing operations, experience has shown that it can be so accommodated.

Of most concern to this reviewer are the amount of training required to make the local creators of such records proficient in their use, the difficulty of maintaining such records in an online environment, and the display standards adopted by the various utilities, vendors, and local systems for both construction and inquiry of such records. Further experience and wider use will confirm or allay such anxieties.

Serials catalogers will love the format and the standards underlying it for its flexible ability to record serial holdings; librarians and users wishing to use the information displayed will be pleased or displeased depending largely on how this highly structured and detailed information appears on a screen. All of us can now, I hope, be confident that the *Holdings Format* has stabilized.

This will open the way for the practical assault on such phenomena as the multiple-version problem, which demands a relatively stable format for solution.—*Robert H. Burger, University of Illinois at Urbana-Champaign.*

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2. Neville A. Fisher and others, *Publishing Patterns of the Next Decade*, Libraries of the Future, v.2 (Westport, Conn.: Coronada Univ. Pr., 1986).

3. Ibid., p.194.

4. Michael R. Culver, "Cataloging at Home with a Microcomputer," in *Technical Services Tomorrow: Proceedings on March 13,*

1988, ed. Charles R. Datum (Chicago: American Library Assn., 1989), p.205–25.

5. Gardner and Rowe, "A Practical Method," p.290.

6. Jo Anne Quoddy, "Problems in Sending Publication Orders by Space Shuttle," in *Technical Services Tomorrow*, p.84–96.

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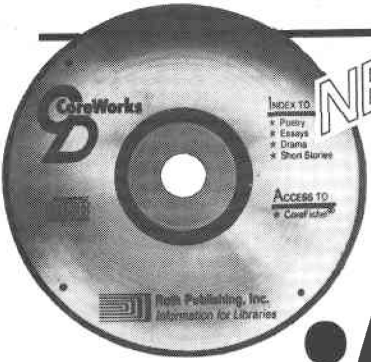

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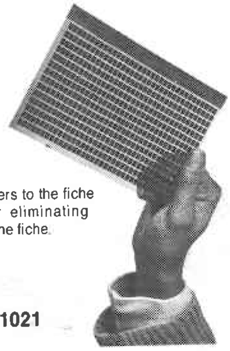

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